LEVO C^3

Instruction manual

Please read the Instruction Manual carefully before attempting to use your wheelchair
Alterations in constructional and technical manner or to the electronic require the written authorisation of LEVO AG, otherwise no warranty or product liability will be accepted.

In case of difficulty contact:

Manufacturer:

LEVO AG
Anglikerstrasse 20
CH-5610 Wohlen
Tel:+41 (0)56 618 44 11
Fax:+41 (0)56 618 44 10
Internet:
http://www.levo.ch

Agent:

Version 1.5

Dear Customer,

We would like to thank you for putting your trust in LEVO stand-up wheelchairs.

The LEVO stand-up wheelchair is a unique aid for use by those facing difficulties walking and standing up. As well as performing all the functions of an active wheelchair, the LEVO enables you to stand up on your own.

Please read these operating instructions carefully before using your LEVO. They contain important information necessary for successful operation of the wheelchair.

Whether you use your LEVO as a stand-up aid at work in everyday life, or to help with standing exercises, it guarantees you optimum independence, mobility and health.

As a LEVO customer, you have a valuable contribution to make to the on-going further development of our products. We put great store by your suggestions, which ensure that LEVO still offers the most comprehensive service available and provides for the widest possible range of needs.

Yours faithfully,

LEVO AG

Content

Declaration of Conformity

As manufacturer of the LEVO Stand-up wheelchair, the company

LEVO AG
Anglikerstrasse 20
CH-5610 Wohlen, Switzerland
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Fax: +41 (0)56-618 4410
Internet: http://www.levo.ch

Declares in all responsibility that the product hereby mentioned (see following list) corresponds with the valid direction of the EC instructions for medical products determined 14th June, 1993 (93/42/EWG).

This Declaration of Conformity of the LEVO *C*^{3} includes all its accessories and options available from LEVO.

ISO 7176-1:1999	Wheelchairs - Part 1: Determination of static stability
ISO 7176-2:2001	Wheelchairs - Part 2: Determination of dynamic stability of electric wheelchairs
ISO 7176-3:2003	Wheelchairs - Part 3: Determination of efficiency of brakes
ISO 7176-4:1997	Wheelchairs - Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range
ISO 7176-5:1986	Wheelchairs - Part 5: Determination of overall dimensions, mass and turning space
ISO 7176-6:2001	Wheelchairs - Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs
ISO 7176-8:1998	Wheelchairs - Part 8: Requirements and test methods for static, impact and fatigue strengths
ISO 7176-9:2001	Wheelchairs - Part 9: Climatic tests for electric wheelchairs
ISO 7176-10:1988	Wheelchairs - Part 10: Determination of obstacle climbing ability of electric wheelchairs
ISO 7176-11:1992	Wheelchairs - Part 11: Test dummies
ISO 7176-13:1989	Wheelchairs - Part 13: Determination of coefficient of friction of test surfaces
ISO 7176-14:1997	Wheelchairs - Part 14: Power and control systems for electric wheelchairs - Requirements and test methods
ISO 7176-15:1996	Wheelchairs - Part 15: Requirements for information disclosure, documentation and labelling
ISO 7176-16:1997	Wheelchairs - Part 16: Resistance to ignition of upholstered parts - Requirements and test methods
ISO 8191-1:1987	Furniture - Assessment of the ignitability of upholstered furniture - Part 1: Ignition source: smouldering cigarette

ISO 8191-2:1988	Furniture - Assessment of ignitability of upholstered furniture - Part 2 : Ignition source : match-flame equivalent
ISO 10993-5:1999	Biological evaluation of medical devices - Part 5: Tests for In Vitro
ISO 14971:2007	Medical devices - Application of risk management to medical devices
EN 12184:2004	Electrically powered wheelchairs, scooters an their chargers
EN 12182:1999	Technical aids for disabled persons. General requirements and test methods
ISO 7176-21:2003	Wheelchairs - Part21: Requirements and test methods for electromagnetic compatibility
EN 61000-3-2:2006	Limits – Limits for harmonic current emissions
EN 61000-3-3:1995+A1:2001 +A2:2005	Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current less or equal 16 A per phase and not subject to conditional connection
CISPR 11:2003+A1:2004	Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement
EN 61000-4-11:2004	Electromagnetic compatibility (EMC). Testing and measurement techniques. Voltage dips, short interruptions and voltage variations immunity tests
EN 61000-4-5:2006	Surge Immunity testing
EN 61000-4-4:2004	Electrical fast transient/burst immunity test
EN 61000-4-2:1995+A1:1998+A1:2001	Electrostatic discharge immunity test
EN 61000-4-6:1996+A1:2001	Immunity to conducted disturbances, induced by radio-frequency fields
EN 61000-4-3:2006	Radiated, radio-frequency, electromagnetic field immunity test
ISO WC/Volume1:1998 Section 7:	Method of Measurement of Seating and Wheel Dimensions
ISO WC/Volume1:1998 Section 20:	Determination of the performance of stand-up wheelchairs
ISO WC/Volume1:1998 Section 22:	Set up procedures
ISO WC/Volume1:1998 Section 93:	Maximum overall dimensions

Type of power stand-up wheelchair:

LEVO C^3 S-XL
52Ah and 73Ah battery capacity Incl. Its options and accessories

Wohlen, January 1, 2010

Thomas Nietlisbach Thomas Räber

Warranty

Your **LEVO** product is guaranteed from the date of purchase for:

- **Two years** covering all material and manufacturing defects of mechanical parts.
- **One year** covering all electronic components including the motors.
- **Batteries are excluded from the warranty.**

LEVO AG will not repair or replace free of charge any part or parts found to be defective due to abuse, misuse or lack of maintenance.

The customer has no claim on warranty, if there has been any design modifications (mechanic or electronic) been made on the wheelchair without the approval from **LEVO AG.**

Warranty claims should be directed to:

- In Switzerland LEVO AG
- Other Countries To your local agent

Addresses and telephone numbers are given on the front page.

1. Intoduction

Thank you to choose the **LEVO** *C*^{3}.

The **LEVO** *C*^{3} has been designed as a powered stand-up wheelchair for indoor and outdoor use. As such it belongs to the wheelchair category B.

The **LEVO** *C*^{3} makes it possible to stand-up and to drive in a standing as well as in a sitting position. This function provides great independence to the user.

This wheelchair is made for everyone whose muscles do not support them to propel a wheelchair manually. The **LEVO** *C*^{3} is a unique aid for those facing difficulties in standing and walking.

The **LEVO** *C*^{3} has been designed for older children and adults who will benefit from motorised mobility and the ability to stand up at will.

The standard model of the **LEVO** *C*^{3} allows comfortable sitting and standing on every stage between the sitting and the complete standing position. Driving is possible in all stages.

The front wheels are permanent powered with the same speed as the middle wheels, which offers a great maneuverability around ramps, obstacles and uneven ground (4WD). In sitting configuration, the chair is driven by the middle wheels and the front wheels are lifted up from the floor which causes a very small turning circle. In standing configuration, the chair is driven by the front wheels and the middle wheels are lifted up from the floor. This allows also a great mobility in standing position. In sitting or standing position, the driven wheels are directly in the centerline of the body.

The seat depth, the armrests and the knee support are stage less adjustable, this gives an ideal possibility to adjust the chair to the customers' needs.

The maximum load weight is 140 kilograms or 310 pounds; this includes all personal belongings carried along too.

Read the safety instructions first, to acquaint yourself with the risks and dangers that can occur by the use of the wheelchair.

The **LEVO** *C*^{3} is certificated with the CE -sign. This product corresponds to the regulations notified as **93/42 EWG**.

If we use the male form in the following, the female form is included in this.

All information, images, pictures and specifications were made on the base of the product information we had at the point in time when we printed the manual. The images and pictures are type examples they don't claim to be exact reproductions of the various parts of the wheelchair.

We reserve ourselves the right to changes of product without previous announcement.

2. Safety instructions

2.1. General safety instructions

For your own security we recommend to read and obey all the instructions carefully in this manual.

LEVO AG is not responsible for damages to persons or property, who resulted from the fact that the user or another person ignored the recommendations, warnings and instructions specified in this manual.

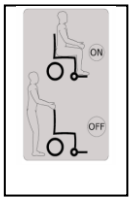
Before using the **LEVO** *C*^{3}, have your **LEVO** dealer explain the instructions to you. It also helps if you have a friend to listen as well. Study the instruction manual yourself or if you cannot understand it, get a friend to help you doing so. Don't hesitate to ask for any explanation.

On the **LEVO** *C*^{3} you find the following symbols attached:

Warning, risk of pinching! Make sure no parts of the body, clothing or other items get jammed

Warning, read user's manual!

Anchorage point for the tie down straps.



Label for the shutdown of the brake release

Warning, risk of tilt over on inclined surfaces

2.2. Operation

Never switch off the joystick module during driving. Otherwise the wheelchair will stop abrupt, so that you run the risk, to be thrown forward from the wheelchair. Just release the joystick to stop the wheelchair from moving.

Be aware of, that your wheelchair can produce electromagnetic emissions and disturb other devices

If unintended movement or brake release occurs, turn the wheelchair OFF as soon as it is safe.

2.3. Driving

The **LEVO** *C*^{3} is designed for outdoor and indoor use. **LEVO** does not recommend driving the **LEVO** *C*^{3} on uneven, soft or steeply sloping ground. Using the **LEVO** *C*^{3} outdoors, switch on the lights at dawn and dusk and in the dark of course.

Don’t let children drive with the wheelchair without supervision.

Avoid driving through puddles with the **LEVO** *C*^{3}. The wheelchair and especially electrical components are very sensitive to too much water, some splashes of water don't harm. (There is a danger of false function regarding some electrical parts getting too wet.)

The wheelchair is not designated to take along passengers, independently from the age of the driver.

Look further ahead while driving, so that you have sufficient time to react to obstacles and avoid accidents in your way.
Pay attention to pedestrians, children, dogs etc. close to and especially in front of you, since they can stop suddenly or change the direction.

Consider the road permission regulations; these are different from country to country. It is usually prescribed by law, which kind of streets can be used for your purposes. Inquire in this regards at your road traffic licensing department.

Avoid steep edges, hillside situations or stairs if you push the chair manually (brake release lever in lower position), because there is a risk to lose the control over the wheelchair because of its weight and measurements. There is even the risk that the user can fall out of the wheelchair. To overcome an obstacle we recommend, using a ramp or an elevator.

The necessary force to push the **LEVO** *C*^{3} manually is higher than you are used to with other powered wheelchairs. Depending on the floor surface and the constitution of the person which is pushing the wheelchair, it can be helpful to have a second person around, to help pushing the wheelchair if necessary.

2.4. Stand-up function

You should under no circumstances attempt to stand up without following all safety precautions.

Standing up stresses your body in ways you may not be used to. Therefore we recommend, consulting your doctor or physical therapist before using the standing function of the **LEVO** *C*^{3}.

The **LEVO** *C*^{3} is only allowed to bring you into the stand-up position when the free wheel device is "ON", this guarantees the motor brakes function correctly. Do not stand-up while the chair is in "free wheel" configuration!

You should only bring the **LEVO** *C*^{3} into standing position, if the chair is on even, solid ground. If this condition is not ensured, the danger of tilting exists.

It is not recommended to drive long distances in the standing position in outdoor areas. This function is meant for moving around standing indoors, as in the kitchen or in the office for examples.

We recommend to stand-up only when in company in case of sudden spasticity, convulsions and similar problems.

2.5. Safety belt system

It's absolutely essential to mount the knee support and the chest belt correct before you use the stand-up function (see chapter 5.).

The chest belt is exclusively intended to hold the torso of the user while driving and the stand-up function. It is not used to be a protection device at collisions and/or accidents.

2.6. Transportation

Do not lift the wheelchair at mobile parts. This can lead to damages to property or person and/or damages at the wheelchair.

2.7. Servicing and maintenance

The **LEVO** *C*^{3} is a complicated piece of machinery. Do not attempt to maintain it yourself. For all maintenance work, please contact an authorized dealer. It is requested that your authorized dealer is in charge to services the wheelchair once every year.

You should only use original **LEVO** spare parts at possible repairs or modifications. If you use other parts, the function and the security of the wheelchair can be influenced. This also means that the wheelchair is no longer covered under warranty.

Programming should only be conducted by healthcare professionals within depth knowledge of PG Drives electronic control systems. Incorrect programming could result in an unsafe set-up of a wheelchair for the user. **LEVO** accepts no liability for losses of any kind if the drive or stability characteristics of the wheelchair are altered without prior notification and discussion with **LEVO**.

All inappropriate changes of the wheelchair and its different systems can lead to an increased accident risk.

All changes and interventions have to be made by an authorized dealer, if you're unsecure about any issue, please ask your dealer first.

3. Preparing the wheelchair for use and operation

3.1. Dispatch and transport

For delivery all **LEVO** wheelchairs are packed in a big cardboard box. The back is detached for careful packing. Especially sensitive parts have extra protection to avoid any damages caused by transportation. All wheelchairs are carried by lorry or air freight.

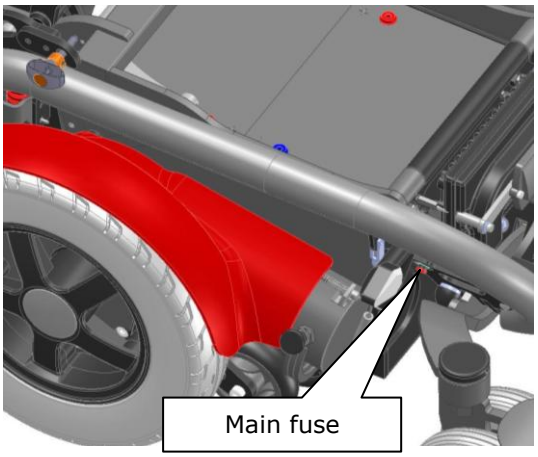
3.2. Delivery

Because of the complex nature of this wheelchair it will be delivered and demonstrated to you by your local agent.

The wheelchair comprises the following components:

	Component	Quantity
1.	Wheelchair base	1
2.	Seat unit	1
3.	Backrest unit	1
4.	Knee support	1
5.	Chest strap	1
6.	Joystick unit	1
7.	Joystick Module	1
8.	Set of batteries	1
9.	Battery charger	1
10.	Tool set	1
11.	Options and accessories	Corresponding to order form

3.3. Storage



The ideal condition to store the **LEVO** *C*^{3} is a temperature between – 40° and + 60° Celsius (between -30° and +140° Fahrenheit). The humidity should not be above 90%. Please take care to guarantee these mentioned conditions to provide a long life time for the **LEVO** *C*^{3}.

That the batteries don't discharge too fast, we recommend turning the main fuse off. We also recommend charging the batteries at least every 2 months if the chair is not used.

3.4. First adjustments

Because the **LEVO** *C*^{3} was ordered with your personal measurements, it should fit your personal constitution when the chair is delivered to you. If there should be any variations, please take a look at chapter 8. there you can see how the different elements can be adjusted.

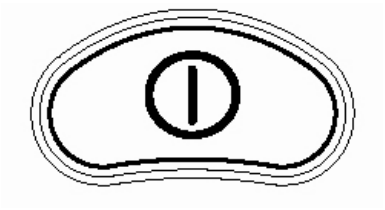
Your local agent is responsible to do the final tuning of the adjustment. Therefore take your time at delivery of the chair to assure the chair fits correctly.

4. Control unit

4.1. VR2-control

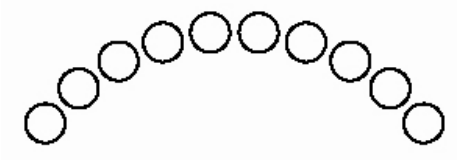
On the control unit you can find a joystick, buttons and symbols, where we take a closer look at in the following.

4.1.1. On-/ Off-button



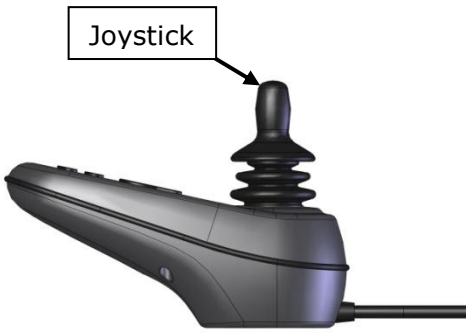
With the On-/ Off-button the chair can be turned on or switched off. Don't use this button to stop the wheelchair, unless there is an emergency.

4.1.2. Battery gauge



The battery gauge shows you that the wheelchair is switched on and it shows you how much power there is left in the batteries. The gauge is also used as an electronic fault detection (see chapter 16.)

4.1.3. Joystick



The joystick controls the direction and speed of the wheelchair.

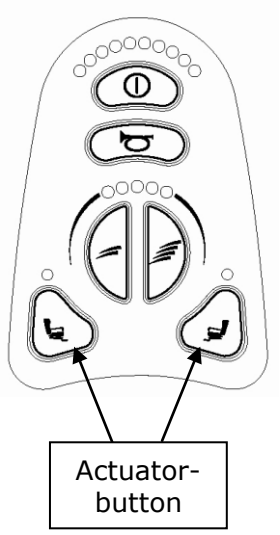
To drive forwards push the joystick forwards. The further you push it from the centre the faster the wheelchair will move. Let go of the joystick and the wheelchair will stop and the brakes come on.
For backwards driving push the joystick backwards. Pushing the joystick to the right side means a right hand curve as a reaction. Pushing the joystick to the left then the chair will drive to the left hand side.
The joystick can be used to choose and to move the actuators as well (see chapter 4.1.5.).

4.1.4. Speed

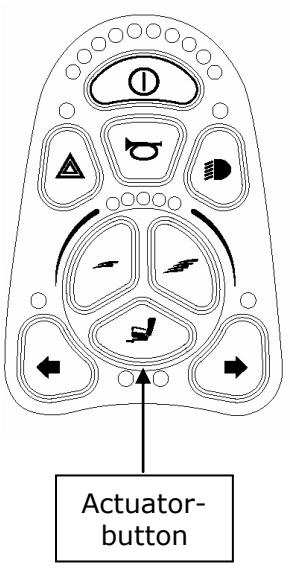
Speed gauge

This is a gauge that shows the maximum speed setting for the wheelchair. This gauge also indicates if the speed of the wheelchair is being limited or if the control system is locked.
If one LED is illuminated, you drive with the slowest speed, 5 illuminated LED's mean that you drive with the highest programmed speed.
If the LED's are flashing, it means the speed is reduced. That happens when you go into standing position.
If the LED's are ripple up and down, it means the chair is locked.

4.1.5. Change of the seat position

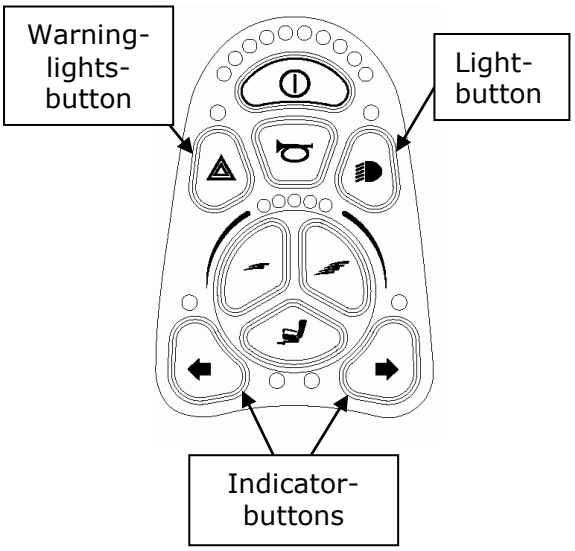


Standard chair without light:
By pressing the left actuator-button, you can activate the stand-up function. If you move the joystick forward, the chair is rising upwards, if you move the joystick backwards, the chair is moving downwards.
If your chair is equipped with the option "Tilt in space", it can be activated by pressing the right actuator-button. If you move the joystick backwards, the complete seat is tilting backwards, if you press the joystick forward, the seat is moving back to the horizontal position.



Chair with light:
If your chair is equipped with light, you just have one button to choose the actuators. To activate the stand-up function, press the actuator-button, deflect the joystick to the left, until the left LED under the actuator-button is illuminated. Now you can move the joystick forward to bring the chair into the stand-up position, to go down into the seating position, you just need to move the joystick backwards.
If you have the option "Tilt in space" on your chair, to choose this actuator, press the actuator-button and move the joystick to the right, until the right LED is illuminated. If you move the joystick backwards, the complete seat is tilting backwards, if you press the joystick forward, the seat is moving back to the horizontal position.

4.1.6. Light kit



If you choosed the option light for your chair, the keypad looks like it's shown on the left.
To activate the light, press the light-button, you switch on the two front and the two rear lights on your chair with this.
To notify that you like to turn to the left, press the left indicator-button, to announce that you like to turn to the right, press the right indicator-button.
If you have a breakdown or you would like to call attention to you, you can activate all indicators at the same time with the warning-lights-button.

4.1.7. Horn

The horn will sound while this button is depressed.

4.1.8. Locking/ unlocking the wheelchair

The VR2 control system can be locked to prevent unauthorized use. The locking method is via a sequence of key presses and joystick movements, as detailed below:

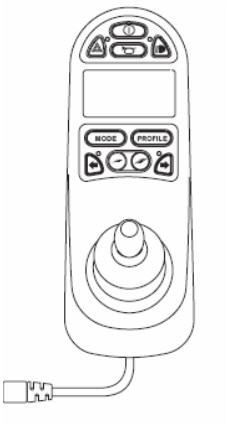
To lock the wheelchair:

- While the control system is switched on, depress and hold the on/off button.
- After 1 second the control will beep. Now release the on/off button.
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now locked.

To unlock the wheelchair:

- Use the on/off button to switch the control system on. The speed indicator will be rippling up and down.
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now unlocked.

4.2. R-net control (option)



On the control unit you can find a joystick, buttons and a LCD-display, where we take a closer look at in the following.

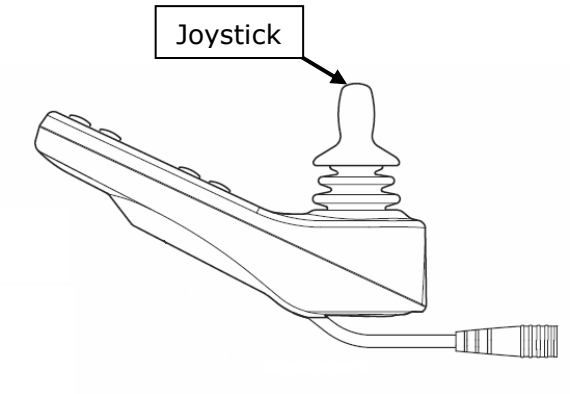
4.2.1. On-/ Off-button

With the On-/ Off-button the chair can be turned on or switched off. Don't use this button to stop the wheelchair, unless there is an emergency.

4.2.2. Battery gauge

This gauge is only visible on the display, if the control is turned on. It shows you how much power there is left in the batteries. If the gauge starts to flash, it means the chair is still working correct, but the batteries should be charged very soon.

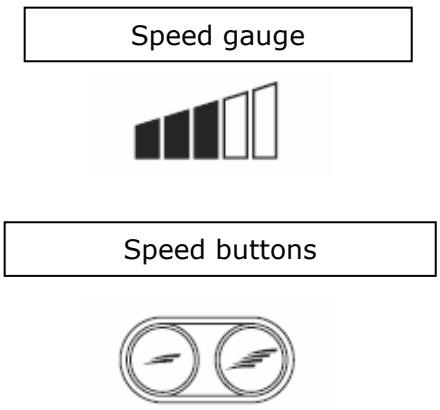
4.2.3. Joystick



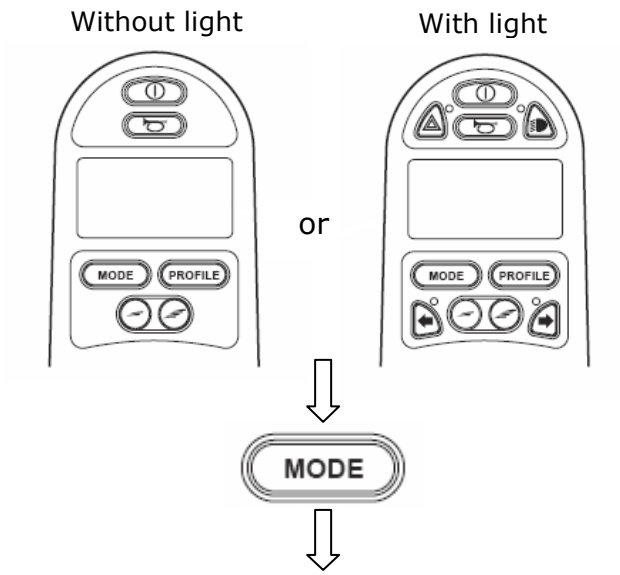
The joystick controls the direction and speed of the wheelchair.

To drive forwards push the joystick forwards. The further you push it from the centre the faster the wheelchair will move. Let go of the joystick and the wheelchair will stop and the brakes come on.
For backwards driving push the joystick backwards. Pushing the joystick to the right side means a right hand curve as a reaction. Pushing the joystick to the left then the chair will drive to the left hand side.
The joystick can be used to choose and to move the actuators as well (see chapter 4.2.5.).

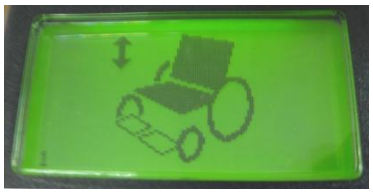
4.2.4. Speed



4.2.5. Change of the seat position



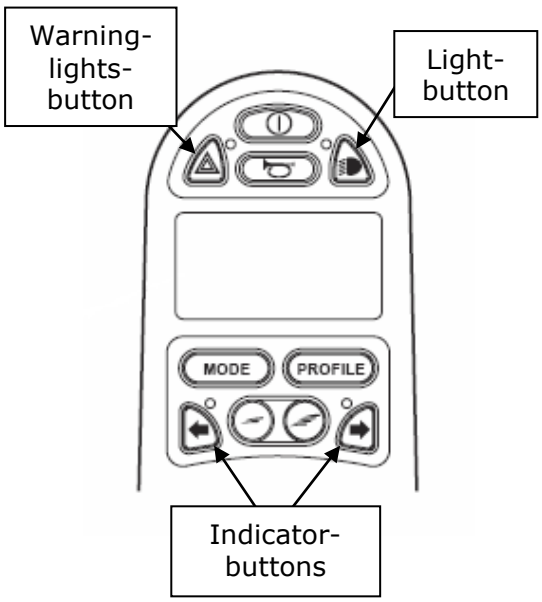
Picture A, menu standing function



Picture B, joystick pressed to the left or right -> Tilt in space

By pressing the MODE-button, you get into the standing function menu (picture A should appear on the display). If you now press the joystick forward, the seat is raising, if you press the joystick backwards, the seat is lowering.
If your chair is equipped with the option "Tilt in space", you can choose this function in the standing menu too, by pressing the joystick to the left or right (picture B should appear on the display). If you pull the joystick backwards, the complete seat is tilting backwards, if you press the joystick forward, the seat is moving back into the horizontal position.
The standing or the tilt motion can be stopped and fixed at any time.

4.2.6. Light Kit



If you choose the option light for your chair, the keypad looks like it's shown on the left.
To activate the light, press the light-button, you switch on the two front and the two rear lights o n your chair with this.
To notify that you like to turn to the left, press the left indicator-button, to announce that you like to turn to the right, press the right indicator-button.
If you have a breakdown or you would like to call attention to you, you can activate all indicators at the same time with the warning-lights-button.

4.2.7. Horn

The horn will sound while this button is depressed.

4.2.8. Locking/ unlocking the wheelchair

The R-net control system can be locked to prevent unauthorized use. The locking method is via a sequence of key presses and joystick movements, as detailed below:

To lock the wheelchair:

- While the control system is switched on, depress and hold the on/off button.
- After 1 second the control will beep. Now release the on/off button.
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now locked.

To unlock the wheelchair:

- Use the on/off button to switch the control system on (a lock is showed on the display).
- Deflect the joystick forwards until the control system beeps.
- Deflect the joystick in reverse until the control system beeps.
- Release the joystick, there will be a long beep.
- The wheelchair is now unlocked.

5. Electromagnetic interference (EMI)

Important: You must be aware of the effect of electromagnetic interference (EMI) regarding your LEVO *C³*. Please study the following facts carefully.

Electromagnetical interference of transmitter and radio wavelength
Powered wheelchairs might be influenced by strong electromagnetic interference. This interference is caused by radio and tv stations, amateur radio sets (walkie-talkie), two-way radios and mobile phones. Interference (especially of radio stations) might have an influence on the brakes of a powered wheelchair so that they get released and so the chair runs away. It could also happen that the wheelchair starts driving in a not desired direction or the stand-up function could operate non-requested. There could occur constant damages to the steering system of the powered wheelchair.

The intensity of power is measured in volt per meter (vpm). All powered wheelchairs are able to resist to a certain amount of electromagnetic interference. This is called "level of disruptive strength". The security depends on the level of disruptive strength; the higher the level the better the protection. Thanks to modern technology the capability of disruptive strength is up to 20 vpm.

The **LEVO** *C³* standard version (no further measures) is supplied with a disruptive strength level of 20 vpm.

The **LEVO** *C³* is constructed to resist to a regular level of interference as it occurs in a household. Beside that there exist a certain number of sources of relatively strong magnetic fields to which you should stay in a safe distance. Some of these magnetic fields are obvious and easy to avoid. Some other are not easy to be realized and it is hard to stay off at times. Please take knowledge of the following list of sources of interference and avoid getting close to these disruptive factors. The EMI-risk is reduced to the minimum when you follow these instructions.
The sources of radiated EMI are put in three categories:

- Portable sender and receiver on which an aerial is directly mounted. Examples: CB-radio, walkie-talkie, sender and receiver of alarming systems, fire alarm, police radio equipment, mobile phone and various private communication systems.
  Please notice: Some mobile phones and similar objects transmit signals as soon as they are switched on even if they are not in use at the moment! There have not been any known incidents caused by mobile phones to date.

- Mobile sender and receiver of intermediate range, as they are installed in police cars, fire engines, ambulances and cubs. The aerial is normally fixed on the outside of the vehicle.

- Sender and receiver of a huge range, as radio and TV stations and amateur radio sets.

Be aware that wireless phones, lap tops, AM/FM-radios, TVs, CD players, recorders as well as gadgets like razors, hair dryers and so on are only small sources of electromagnetically interference. These objects don't cause any problems regarding the functionality of the **LEVO** *C³.*

Electromagnetical interference in regard to a powered wheelchair
Considering that electromagnetical power reaches high intensity in just a short time as soon as you get close to the source, it is advised to take especially care carrying a sender and receiver with you. It might occur that an item as mentioned gets very close to the controller of the wheelchair and like that electromagnetic energy gets unintended too close too. In this situation the electromagnetic energy might influence negatively the function of brakes as well as the motion characteristics of the wheelchair.

Warning: Your wheelchair can produce electromagnetic emissions as well and disturb other devices.

If unintended movement or brake release occurs, turn the wheelchair OFF as soon as it is safe.

6. Driving the wheelchair

6.1. Driving in general

Before starting to drive your wheelchair take time to read all the instructions regarding the **LEVO** *C*^{3} and to get to know the controls. When first learning to drive your wheelchair, practice in an area you know well. We suggest a large flat smooth area such as your living room or the driveway to your home. Do not attempt to drive the wheelchair in confined areas or where there is traffic until you are sure you can control the wheelchair safely.

When driving outdoors always have the seat plate in a horizontal position or tilted backwards (in case seat angle tilt is an optional function).

Switch on the joystick module and practice driving the wheelchair slowly forwards, backwards and turning side to side. When you have more confidence increase the speed and practice until you have mastered driving the wheelchair.

It is possible to drive the wheelchair in the standing position. Speeds are cut to half the speed as soon as the seat leaves the lowest seat position. When indoors practice standing up in the wheelchair and slowly driving it across the room.

The wheelchair allows driving absolutely safely in a sitting position on slopes with a maximum gradient up to 10 degree. When driving up or down steeper slopes than this or over uneven ground, braking and steering response will be limited due to reduced traction. On a slope don't lean out of the wheelchair down the slope. Driving in a standing is no problem on an even and none angled ground.

A limit switch with some important security features programmed is a standard of the **LEVO** *C*^{3}*.* In correlation of the current position of the chair and the inclination of the ground the speed is automatically reduced. In extreme situations the system prohibits to continuing driving for the safety of the user. It is be possible to go on as soon as the seat plate is lowered. Please read the detailed information below.

6.2. Obstacles

Avoid driving your **LEVO** *C*^{3} over obstacles that are higher than 80 mm. The risk to tilt over raises during you drive over high curbs as well as the risk to damage your wheelchair.

If you like to pass an obstacle you never drove over before, **LEVO** recommends doing this with an assistant, to get used to the reactions of the wheelchair.

Because of the special drive mechanism, obstacles can be overcome in an angle of 45°.

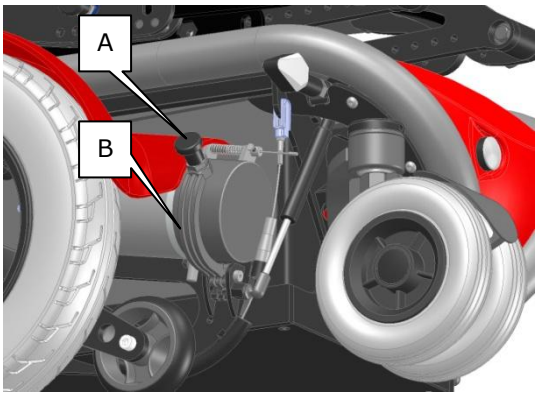
Drive carefully if you pass an obstacle.

6.3. Permissible inclinations

The test (TUV, Germany) of the stability of the **LEVO** *C*[3] while not in motion proved the following results:

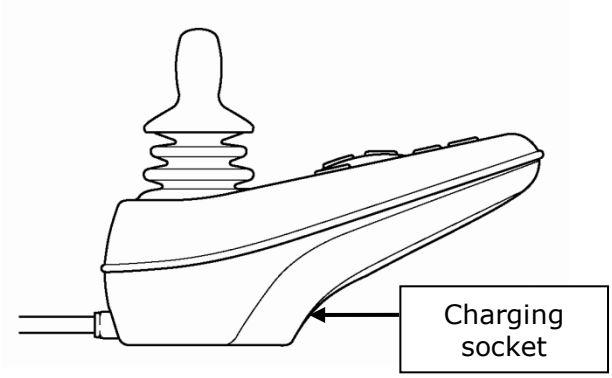
Sitting position facing downhill	13 degree
Standing position facing downhill	10 degree
Sitting position facing uphill (front wheels not touching the ground at the max., but still 100% of stability)	18 degree
Sitting position crossways direction	16 degree
Sitting position 45° to the horizontal direction	9 degree

6.4. Unlock the drive brakes



To disengage the motor brakes, to push the chair manually, switch off the control, pull the quick release knob (A) and press the lever (B) down.
Attention: The brakes are out of order in this position.
To bring the wheelchair in the standard driving mode, press the lever (B) upwards and take care that the quick release knob (A) snaps in.

6.5. Charging the batteries



Only use the charger LEVO delivered with the chair.
To charge the batteries, switch off the control unit and plug the charger into the socket beneath the front of the joystick.
If the joystick is witched on, the batteries won't charge.
If the batteries are completely discharged, it takes at least 10 hours to fully charge them.

7. Safety harness

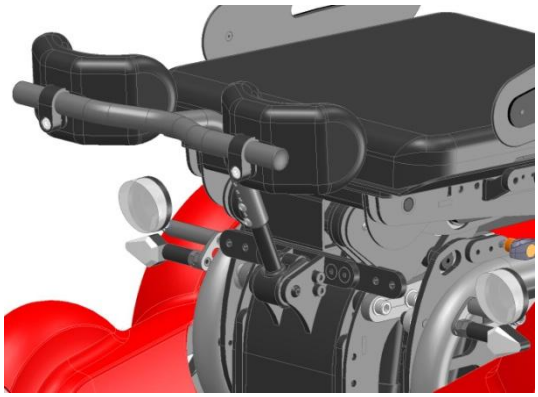
The safety harness consists of two parts: a chest strap and a knee support.

Caution: Before attempting to stand in your wheelchair, fit and adjust the chest strap and the knee support.

7.1. Knee support

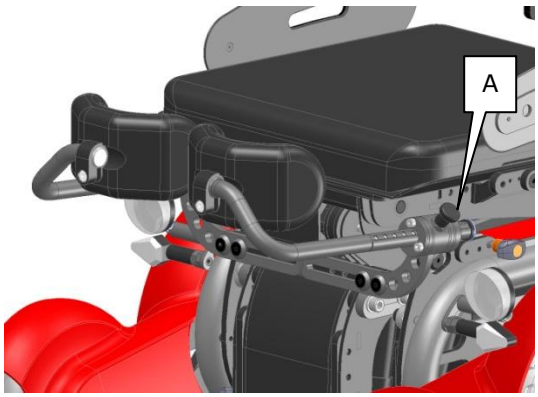
The knee support helps your knee not to bow in the standing position; you are standing with your legs totally stretched. Beside that the knee support keeps you in the perfect position during the stand-up motion.

7.1.1. Knee support „Pro"



You can insert the knee support with just one hand.
To remove the knee support, pull it a bit to the back and then upwards.
If the adjustments don't fulfill your requirements, please see chapter 8.7.1. to adjust the knee support.

7.1.2. Knee support „Integral"



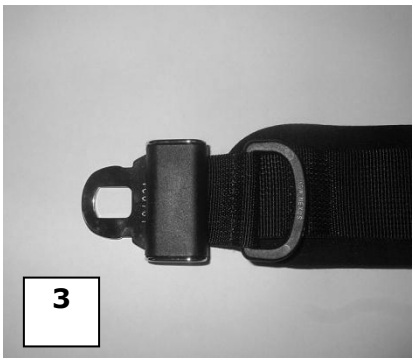
To use the knee support, make sure that it's adjusted correctly.
Pull the quick release knob (A) and bring the knee support in position, release the quick release knob and make sure that it's locked in place.
If the adjustments don't fulfill your requirements, please see chapter 8.7.2. to adjust the knee support.

7.2. Chest strap

Press the Velcro strip of the chest strap onto the back of the Axxis backrest. Make sure the chest strap is passed around the backrest and the backrest tubes (picture 1). The height of the chest strap may be changed. Simply pull it off the backrest and refit it to the desired position.

Guide the chest strap around the backrest posts to the front and secure your torso by closing the buckle (picture 2). Adjust the length of the strap so that it is not too tight but fits comfortably across your chest.

The length can be adjusted in two different ways.



There is a closure at the buckle for small adjustments of the length (picture 3).
If you need to adjust the length of the chest strap more, you have to do it at the back of the chest strap.
Take off the chest strap and change the length at the two metal-buckles (picture 4).

8. Transfer

8.1. Getting into the wheelchair

- Make sure the wheelchair joystick module is switched off.
- Check if the motor disengaging lever is in the ON position for no movements of the powered wheels.
- Lift up the footplates.
- Transfer yourself onto the seat using the armrests for support or have yourself transferred onto the seat.
- Lock the footrests down and rest your feet on them.
- Fit the knee support and chest strap.

8.2. Getting out of the wheelchair

- Make sure the wheelchair joystick module is switched off.
- Check if the motor disengaging lever is in the ON position for no movements of the powered wheels.
- Remove the chest strap and knee support.
- Lift up the foot plates.
- Transfer yourself in your usual way out of the wheelchair or have yourself transferred out of the wheelchair.

8.3. Sideways transfer

- Drive as close as possible to a chair, bed or any other objects you want to transfer to.
- Make sure the joystick module is switched off.
- Check if the motor disengaging lever is in the ON position for no movements of the powered wheels.
- Flip up the footrest of the wheelchair and put your feet on the ground.
- Lift up the armrest on the side you are transferring to.
- Transfer yourself in your usual way out of the wheelchair or have yourself transferred out of the wheelchair.

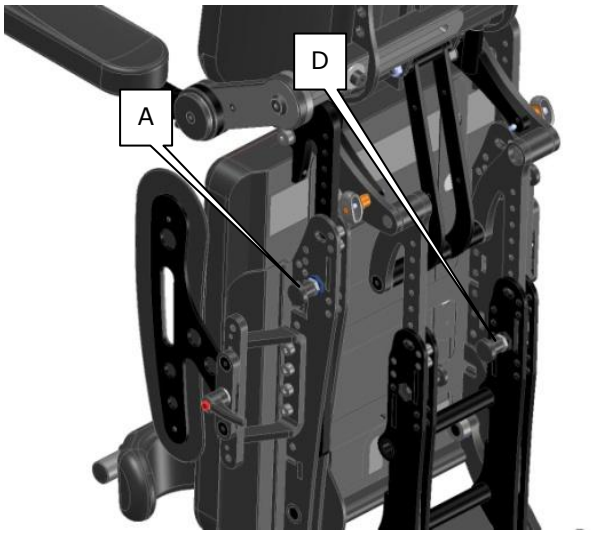
9. Individual settings

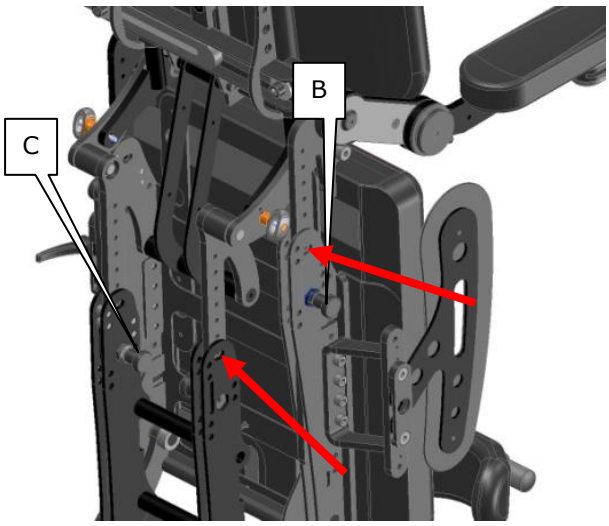
The **LEVO** *C*^{3} is individual adjustable to every person. Partly it is necessary to have tools for the adjustments; on some elements it is possible to adjust them simply without any tools.

Required tools:

- Allen key: from 3mm to 8 mm
- Spanner: 13 mm

9.1. Adjustment of the seat depth





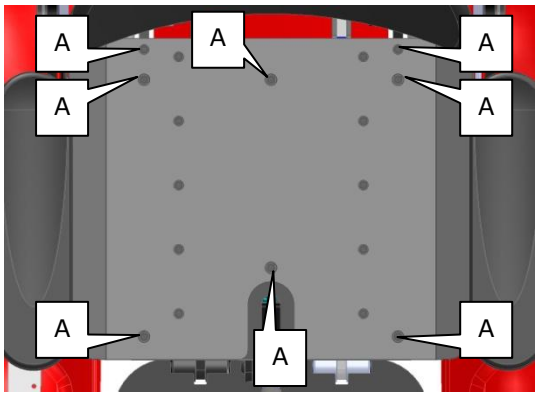
The seat depth will be adjusted with (optional w/o) tools.
Adjust the lower levers first. Release the screw (pull the bolt) (C) and (D). Now you can set the levers to the necessary length.
Tighten the screw (release the bolt) and lock the lever in the new position.

Now you can adjust the upper levers. Release the screw (pull the bolt) (A) and (B). Now you can adjust the lever to the **same number/length** like the lower levers.
Tighten the screw (release the bolt) and lock the lever in the new position.

Please watch the red arrow on the picture.

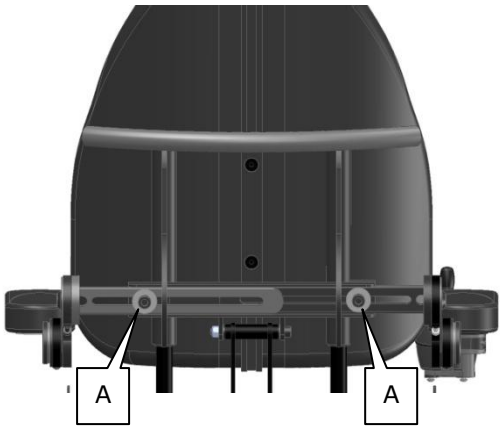
Warning: Please watch the right position of the lower and the upper lever.
Per example, if you choose the seat depth of 48cm, 48cm have to be shown at the small window (red arrow at the picture left).

9.2. Change of the seat width



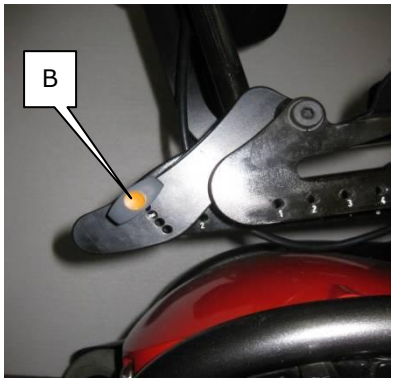
Take off the seat cushion first.
Telescope the seat plate to the first position (see chapter 9.1.)
Untighten the 8 screws (A) at the seat plate, to be able to take off the whole seat plate.
Put the new wider/smaller seat plate on the chair and tighten the 8 screws to fix the new seat plate.
The adjust the distance between the armrests to the seat plate, follow the instructions in chapter 9.3.
To adjust the knee support to the changed seat width, follow the instructions in chapter 9.7.
If the chair is equipped with the skirt guard, you have to change the bracket, to match it with the seat width.

9.3. Change the distance between the armrests



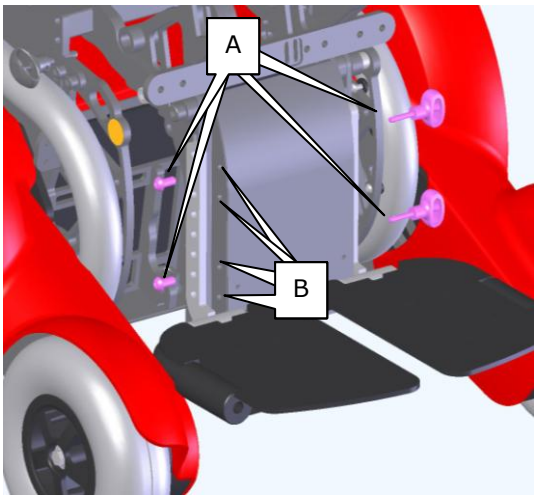
Untighten the two screws (A), now you can slide the armrests stepless in the width.
If you have adjusted them to the desired width, tighten the screws.

9.4. Adjustment of the backrest angle



You can adjust the backrest in different angles.
Take off the quick release pin (B) on both sides. Now you can tilt the backrest back and forward to the desired angle. Put the quick pins back into the hole where the backrest post and the plate correspond.

9.5. Change of the distance footrest - seat cushion and angle adjustment of the footrest



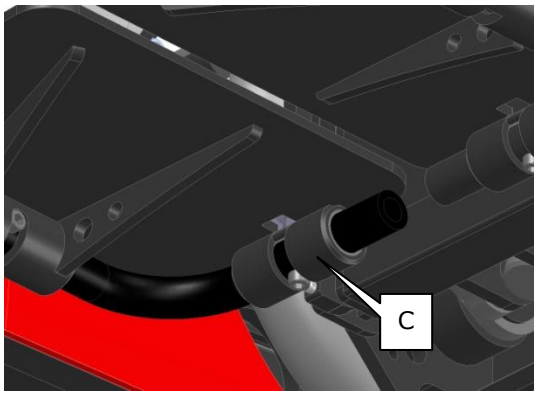
The footrest will be adjusted with (optional w/o) tools.

To change the height of the footrest, release the screw (pull the quick release bolt) (A). Now you can set the footrest to the necessary height.

Tighten the screw (position the quick release bolt) back in place.

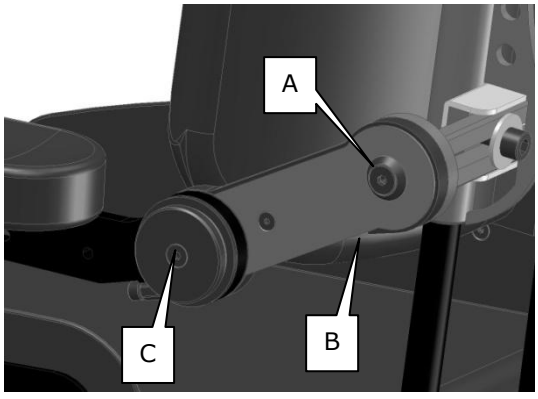
On both sides there are 4 holes (B) you can use to adjust the height.

If the chair is equipped with the quick release bolts, the 4 holes (B) will be assembled with threaded bushing.



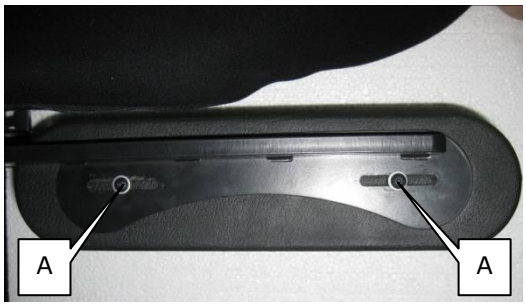
The angle of the footrest plate is adjustable by turning on the screw (C).
If you turn the screw clockwise, the plate is rising, if you turn the screw counter clockwise, the plate is lowering.
That the screw isn't becoming unscrewed, we recommend mounting the screw with thread locker.

9.6. Adjustment of the armrest height/angle



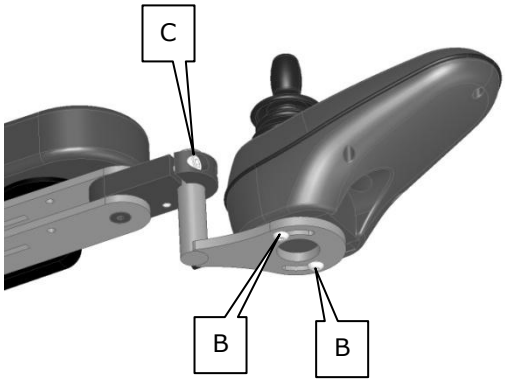
To adjust the height/angle, first unscrew the screw (A) a bit, now you can untighten the screw (B) to lower the armrest or tighten the screw to raise it.
If the armrest is at the necessary height, tighten the screw (A).
Take care that the armrest is tight enough, that it holds in every position. Check out the torque of the screw (C), this has to be 6Nm.

9.7. Adjustment of the armrest length



You can adjust the position of the armrest pad. Just unscrew the two screws (A) a bit and then you're able to shift the pad forward and backwards. After you reached the necessary position, tighten the screws (A) until the pad is fixed.

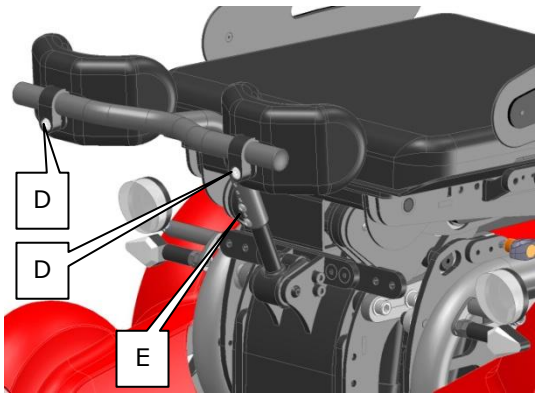
9.8. Change the position of the control unit



You can adjust the control unit to the inner or outer side.
Untighten the screws (B) and screw (C), now you can bring the control unit into the necessary position. If you have reached the correct position, tighten the screws.

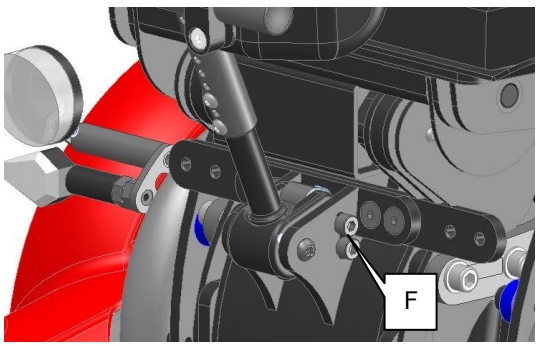
9.9. Adjustment of the knee support

9.9.1. Knee support „Pro"



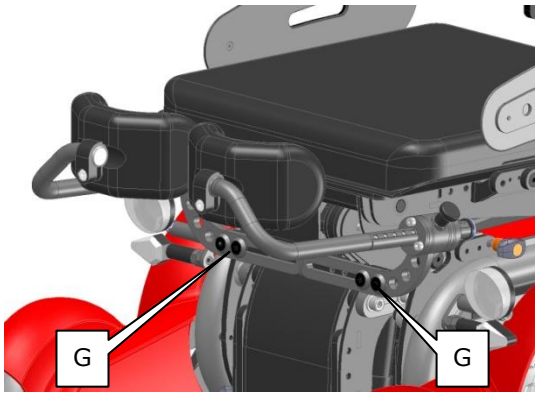
Adjusting the distance between the knee pads:
Untighten the two screws (D), adjust the knee pads to the necessary width and tighten the screws (D).

Adjusting the height of the knee support:
Untighten the two screws (E), now you can adjust the height of the knee support. If it is adjusted to the correct position, put the screws (E) back into place and tighten them.

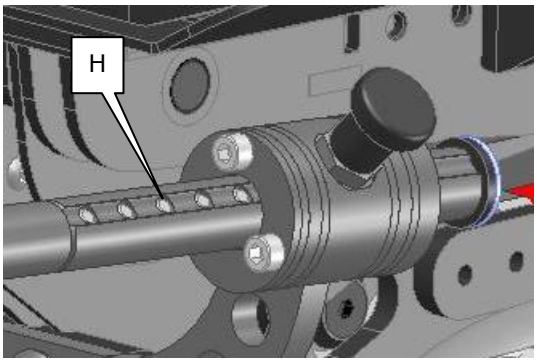


Adjustment of the angle:
Untighten the 4 screws (F), now you can adjust the angle of the knee support. If the correct position is reached, tighten the screws.

9.9.2. Knee support „Integral"

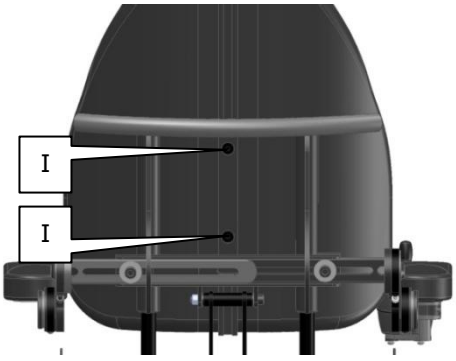


Adjusting the distance between the knee pads:
Untighten the 4 screws (G), adjust the knee support to the necessary width and tighten the screws (G).



Adjusting the depth of the knee support:
Check in which hole, the quick release bolt has to lock, turn the set screw (H) counterclockwise downwards, that the quick release bolt can lock into the hole.
Check the hole that was used before, turn this set screw clockwise that the hole is blocked.

9.10. Adjustment of the backrest height



You can adjust the height of the backrest by untighten the two screws (I) a bit. Then you're able to shift the backrest up and down. If the backrest is in the desired position, tighten the screws (I).

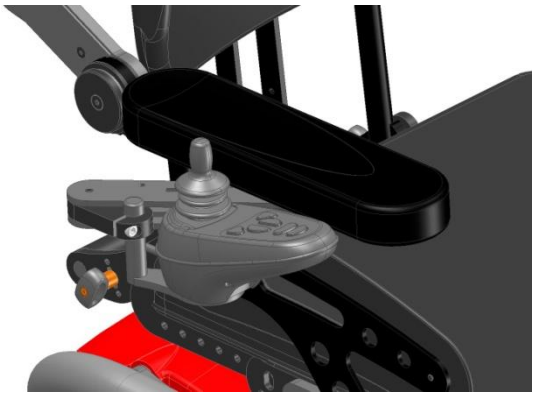
10. Options

The **LEVO** *C*^{3} can be equipped with several options. The most options can also be mounted after the chair is delivered.

10.1. Tilt in space

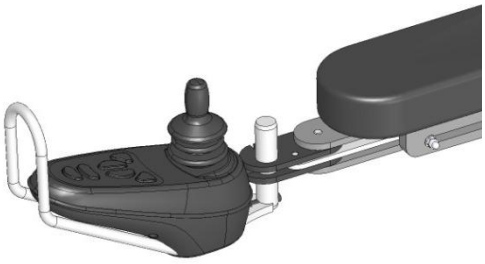
With the option „Tilt in space" it's possible to tilt the seat to an angle of 34° to the back, this leads to a more comfortable seat-/ rest-position. The "Tilt in space" is a good prevention against decubitus by the way.
In chapter 4.6. you can see how the "Tilt in space" can be adjusted.

10.2. Swing away holder for the Control unit



The swing away joystick holder is used to drive closer to a table for example. The transfer can also be easier, if the control unit is retractable.
With the aid of the magnet that's mounted at the armrest, you can adjust the force, that's needed to deviate the control unit.

10.3. Joystick protection guard

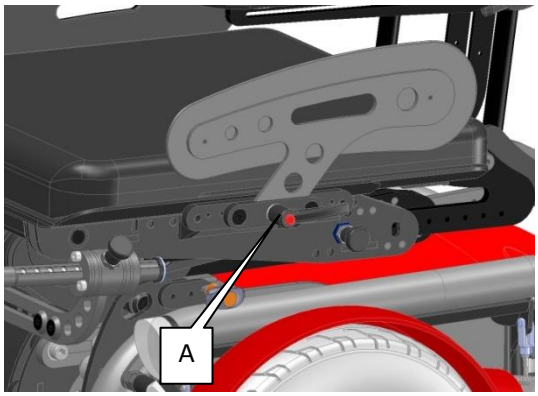


You can avoid collisions between the joystick and other objects with the joystick protection guard.
It protects the users hand on the joystick as well.

10.4. Swing away table tray

The swing away table tray is retractable to the side, if you don't need it.

10.5. Skirt guard



The skirt guard should prevent that the clothing is hanging beside the seat and is getting into the drive wheels or the standing mechanism.
The skirt guard is easily displaceable for lateral transfers. Just untighten the stop lever (A), now you can easily lift the skirt guard upwards to remove it.

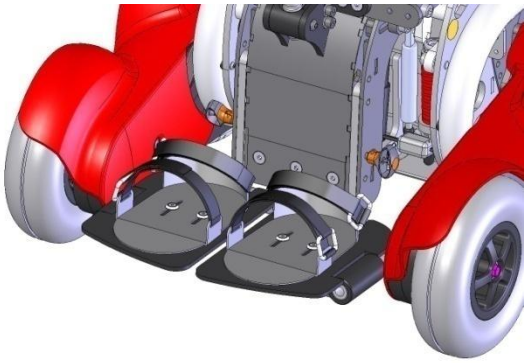
10.6. Upper leg support

Leads the thigh and stabilizes the leg axle in seating and standing position.
Can be adapted individually in place, distance, angle and height.
To change the position, open the zipper at the outside of the pad and untighten the screws lightly, now you can adjust the pad to the necessary position, tighten the screws afterwards.

10.7. Chest role

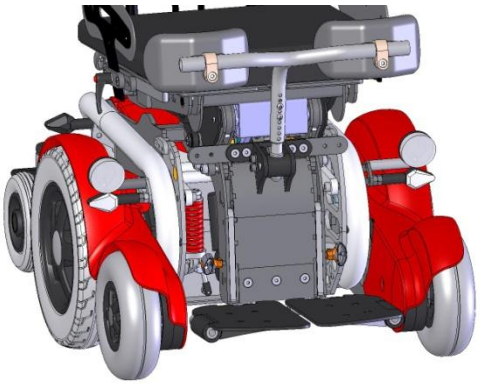
The chest role gives a feeling of more safety and stability, especially while standing.
Important: It does not replaces the chest strap.
It is individually adjustable in the height.

10.8. Foot guide



The foot guides give a better opportunity to place and stabilize the feet.
They are individually adjustable, you just have to drill two holes into the footplate at the necessary place, to mount the foot guides with the provided screws.

10.9. Lamps for outdoor use with indicators

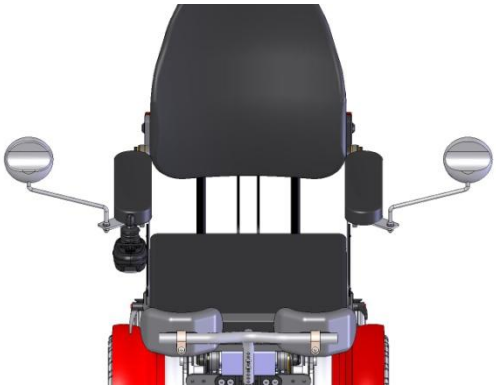


Some countries assume a fully functional light kit, to drive on public roads with the chair.
LEVO AG recommends to equip the chair with light, if you use your **LEVO** *C*^{3} predominant outdoors.
If you wish to equip your chair afterwards with the light kit, your **LEVO**-Dealer /-distributor can mount it additionally.

10.10. Jostick-top

If you are not satisfied with the standard joystick knob, there are several different shapes available.
To change it, just pull the knob upwards to remove it and push the new knob over the joystick post.

10.11. Rear view mirror

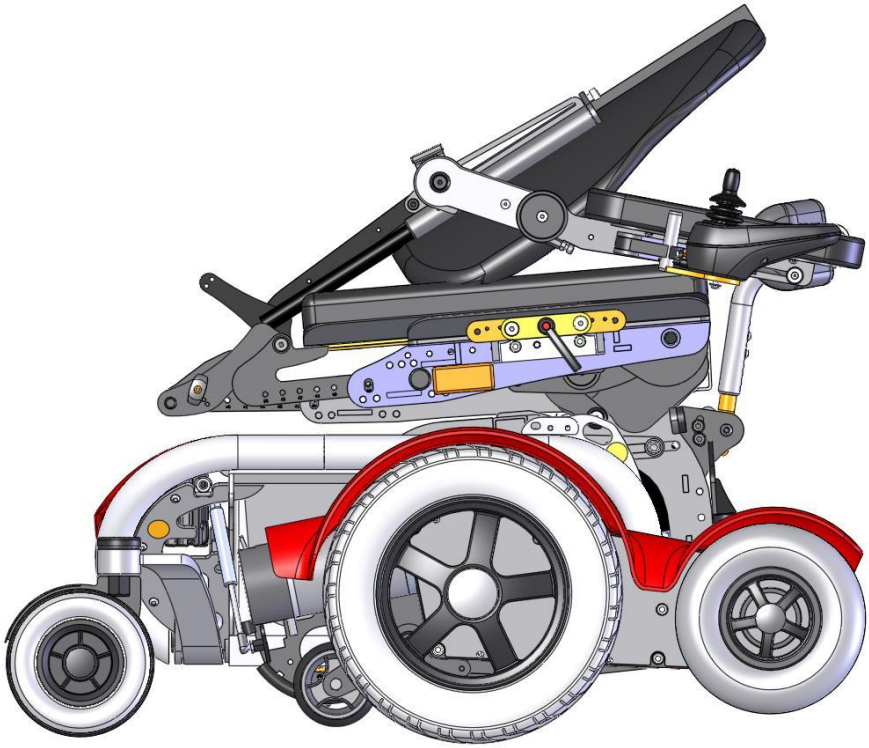


To have a better overview in the public traffic, you can have rear view mirrors on your **LEVO** *C*^{3} as well.

11. Transportation of your wheelchair

To have a bit smaller dimensions of the chair, when you like to transport it, there are two things you can do:

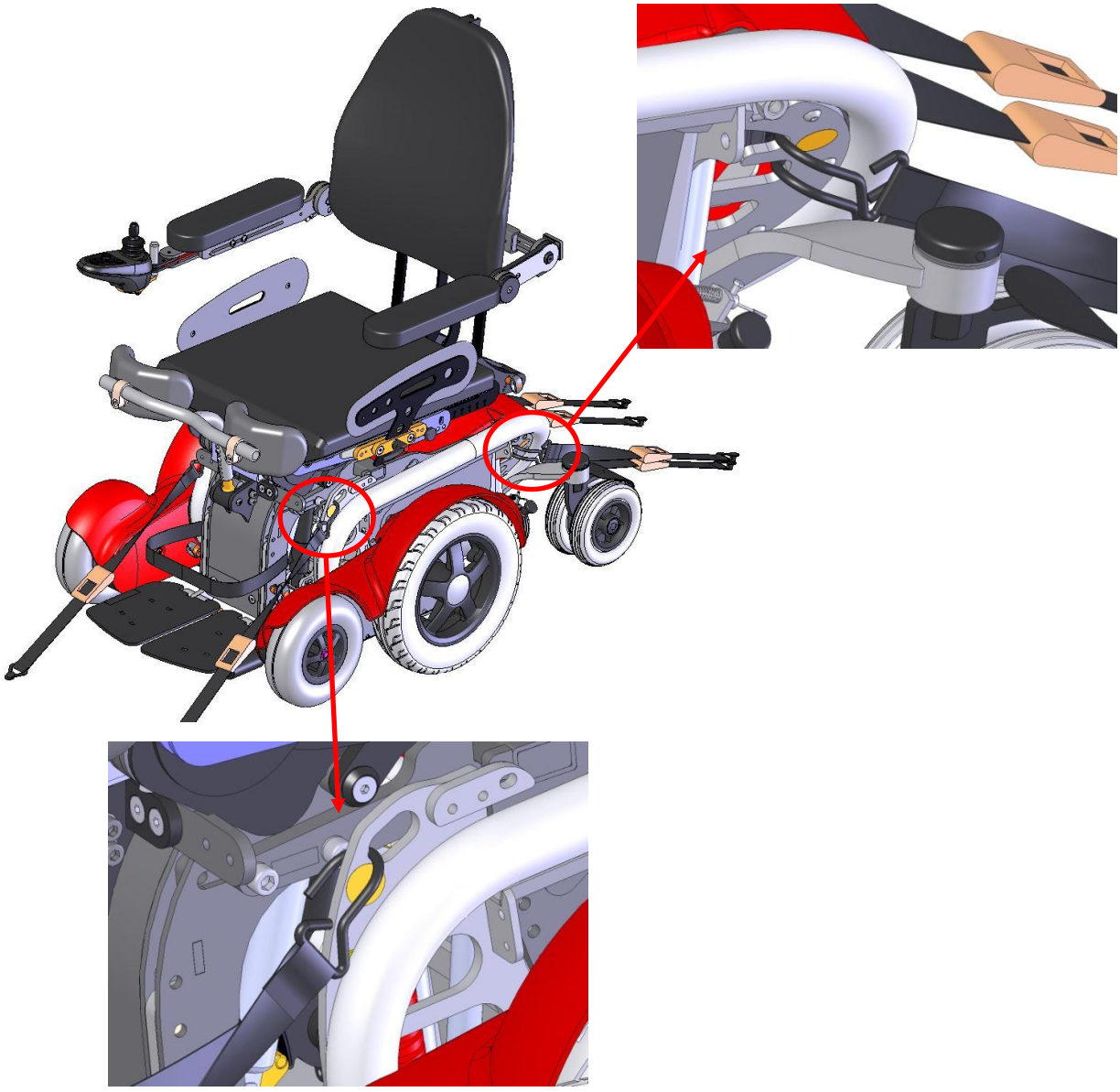
- Flip up the footrest
- Fold down the backrest (take off the quick pin and fold it)



11.1. Transportation in a vehicle without the person in the wheelchair

When transporting the wheelchair in a motor vehicle, make sure that the wheelchair is so secured as to prevent it sliding about or tipping over. Just use the licensed fastening systems and secure the wheelchair at the marked anchorage points (hook sticker).

Here’s an example how the chair should be strapped down in a motor vehicle:



11.2. Transportation in a vehicle with the person in the wheelchair

The **LEVO** *C*^{3} passed the crash test after the norms ISO 7176/19 and ANSI/RESNA WC/Vol. 1-Section 19.

The **LEVO** *C*^{3} has been positively crash tested for car transportation after the norms mentioned above. Please read the information/instructions below:

Certified test centre:	Millbrook Proving Ground Ltd, Bedford MK45 2JQ, UK
Millbrook Report No.:	MBK 07/0995
Millbrook Test No.:	S10169
Restraints Wheelchair:	Q'Straint 4 Punkte Gurten mit Karabiner (http://www.qstraint.com/english/products/products.aspx)
Restraints Occupant:	Q'Straint Vehicle Anch 3-Pt
Requirements ISO 7176/19:	Pass
And ANSI/RESNA Section 19:	Pass

Preparations of the **LEVO** *C*^{3} before using it for car transportation:

1. The chair has to be tight down by using the Q'Straint 4 pt with karabiners or any restraint system that has been tested and passed the ISO 10542/2 standards.
2. The occupant has to be safely secured by using the Q'Straint Vehicle Anch 3-Pt or any restraint system that has been tested and passed the ISO 10542/2 standards.

12. Cleaning

- Whenever the wheelchair gets dirty it should be cleaned using a damp cloth and then dried thoroughly.
- For more stubborn stains wipe with a damp cloth using a mild solution of warm water and a mild cleansing agent.
- Never use furniture polish, spirit or solvents to clean the frame.
- In case of dirt on the seat cushion cover or the back rest cover, you can remove both of it and wash it softly. Do not wash it warmer than **40 degree Celsius.**

Caution: Never use a high pressure water cleaner.

13. Maintenance

13.1. Service

The **LEVO** *C*^{3} is designed to be maintenance free and apart from the items below does not require attention from the user. Please note that to maintain safe and efficient operation the wheelchair should be serviced at least once per year by your **LEVO** agent or authorized dealer. This annual service has to be filled into the service card from the agent/dealer.

The user or their family can easily carry out the following tasks.

- Keep the wheelchair clean.
- Never store the wheelchair when damp.
- Keep the batteries charged to the maximum.
- Check if all fittings, harness, etc. are working properly (see section 6. - 8.).
- Check operation of motor disengaging lever weekly.
- Check operation of all controls daily.
- If any faults are found, report them immediately to your agent. He will advise you whether to continue using the wheelchair or not, and what action you should take to repair the wheelchair.

13.2. Safety checks

The electronic circuits in your control system have been designed to be extremely safe and reliable. The on-board microcomputer carries out safety checks at up to 100 times per second. To supplement this safety monitoring you should carry out the following periodic checks.

If the control system fails any of these checks, do not use the wheelchair and contact your service agent.

13.2.1. Daily checks

Joystick: With the control system switched off, check that the joystick is not bent or damaged and that it returns to the center when you push and release it. If there is a problem do not continue with the safety checks and contact your service agent.

13.2.2. Weekly checks

Solenoid (parking) brake:

This test should be carried out on a level floor with at least one meter clear space around the wheelchair.

- Switch on the control system.
- Check that the battery gauge remains on, or flashes slowly, after one second.
- Push the joystick slowly forwards until you hear the parking brakes operate.
  The chair may start to move.
- Immediately release the joystick. You must be able to hear each parking brake operate within a few seconds.
- Repeat the test a further three times, pushing the joystick slowly backwards, left and right.

Connectors:	Make sure that all connectors are securely mated.
Cables:	Check the condition of all cables and connectors for damage.
Joystick gaiter:	Check the thin rubber gaiter or boot, around the base of the joystick shaft, for damaged or splitting. Check visually only, do not handle the gaiter.
Mounting:	Make sure that all the components of the control system are securely mounted. Do not over tighten any securing screws.

13.3. Spare parts

LEVO AG delivers single parts or modules as spare parts. Your distributor can provide all spare parts listed for your **LEVO** *C*^{3}. You have also the opportunity to order a spare part list from **LEVO AG** directly.

14. Disposal

Wheelchair:

Return the wheelchair after the product lifetime to the sales point. The dealer will dispose of it according to local regulations. Regarding the possibilities for individual adjustments your **LEVO** *C*^{3} might be of use to another stand-up wheelchair user.

Batteries:

Return old batteries to the sales point of the wheelchair or of the new batteries. The dealer will dispose of them according to local regulations. Remove the batteries especially careful, if they could have a damaged casing, because there is the risk of a chemical burn.

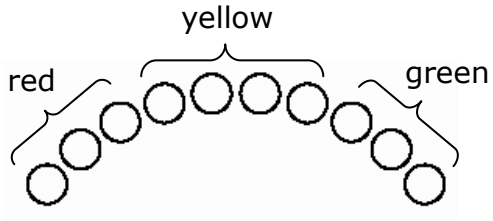
15. Trouble shooting

If you have problems with your wheelchair check this list before calling your local agent.

ITEM	PROBLEM	Solution
Joystick Module	Battery level indicator does not light	• Switch on ON/OFF switch • Switch on safety cut out • Unplug charging plug • Replace battery • If above does not work consult LEVO agent
	Battery level indicator flashes slowly	• Charge Battery
	Battery level indicator blinks every 2.5 Seconds	• Joystick module in sleep mode. To restart switch off then on again
	Battery level indicator flashes rapidly	• See chapter 16
Driving	Will not drive in a straight line	• Consult LEVO agent
	Motors turn and battery level indicator lights up but chair does not drive	• Push motor disengaging lever upwards • Charge batteries
Battery charger 2412SRF	LED 1 does not light	• Plug in main plug • Check fuse at the charger • Check household fuse
	LED 1 lights red, but LED 2 does not light	• Check fuse at the charger • Consult LEVO agent
	LED 1 lights, LED 2 flashes green	• Check charging plug is inserted • Check safety switch is on • Consult LEVO agent
	LED 1 lights, LED 2 flashes fast green	• Charger has a damage • Check with your dealer to replace the charger
	Red Polarity lamp LED 2 lights	• Unplug charger immediately • Consult LEVO agent

16. Controller self help guide VR2

The battery indicator provides information in case a fault occurs to the wheelchair's electronical system. An appropriate number of lights flash rapidly on the display for a particular fault. Please see below.

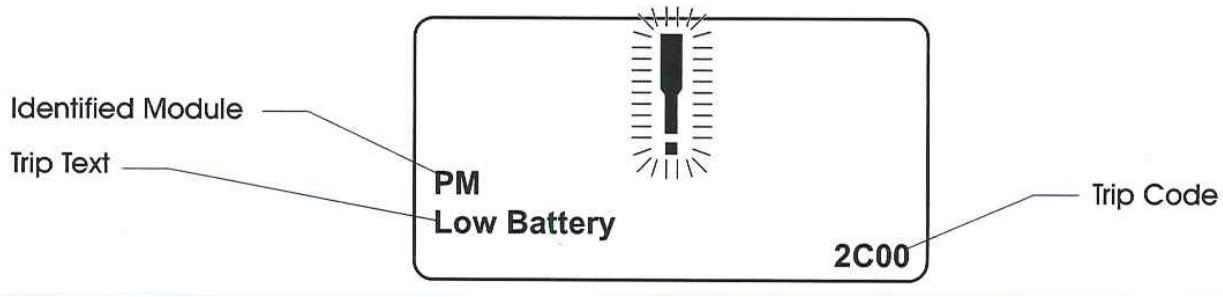


Lights flashing		
10 green	High battery voltage	An excessive voltage has been applied to the control system. This is usually caused by a poor battery connection. Check battery and power module connections. If the fault remains contact your local agent.
9 green	Solenoid brake fault	The parking brakes have a bad connection. Make sure all connectors are plugged in properly. If the fault remains contact your local agent
8 green	Possible power module fault	A Power Module fault is indicated. Make sure all the power module connections are pushed in properly.
7 yellow	Possible joystick module fault	A joystick fault is indicated. Make sure the joystick is in the rest position before switching on.
6 yellow	Charger connected	The battery charger is plugged into the wheelchair. Unplug the charger from the joystick module.
5 yellow	Right motor wiring fault	The right-hand motor has a short circuit to a battery connection. Contact your local agent.
4 yellow	Right motor disconnected	The right-hand motor has a bad connection. Make sure the motor connector is plugged in properly.
3 red	Left motor wiring fault	The left-hand motor has a short circuit to a battery connection. Contact your local agent.
2 red	Left motor disconnected	The left-hand motor has a bad connection. Make sure the motor connector is plugged in properly.
1 red	Low battery voltage	The battery needs charging or there is a bad connection in the battery. Check connections to the battery, power module and joystick module.

Please contact your local specialist in case you followed the advices but the problem still exists. Please provide your specialist with the serial number of your **LEVO** *C*^{3} which is noted on the warranty card. This number might be important in case of questions to the manufacture company **LEVO AG**.

17. Controller self help guide R-net

The joystick module has its own error-management-system. If an error occurs, a message is indicated on the display, for example this could look like that:



If you can't solve the problem, just with the showed message, you can enter the trip code on the PG Drives homepage (http://www.pgdt.com/diagmob/diagnostic.asp), there you'll get some more information about the error and how you can solve it. If you can't solve the problem, please get in touch with your **LEVO**-dealer.

18. Technical information

Model	**LEVO** C^3			
Wheelchair category	B			
Seat width	32 – 52 cm			
Overall width	63 cm			
Overall length (without footplate)	105 cm			
Overall length (with footplate)	105 cm			
Overall height, incl. backrest	100 cm			
Backrest	V-Trak 40cm (or any other optional heights)			
Seat height (incl. Seat cushion)	48 cm			
Seat depth	38 – 66 cm			
Type of tire	breakdown safe, without air			
Size of tire	front 2.80/2.50-4"	middle 3.00-8"	back 7x1 3/4"	
Footrest	heigth and angle adjustable			
Max. weight	185 kg			
Max. total load	140 kg			
Speed	0-10 km/h			
Turning circle	110 cm			
Max. gradient (sitting position)	10°			
Max. gradient (standing position)	3°			
Curb climbing ability (sitting position)	8 cm			
Curb climbing ability (standing position)	2 cm			
Range (55 Ah/ 73 Ah batteries)	25 km/ 35 km			
Battery charger	Brand: Soneil, Type 2412SRF-B, voltage 24V DC, current 6A			
Joystick module	PG Drives VR2 90A or R-net 120A			
Programming of driving characteristics	Standard for trained	Classic for newcomer	Fun for experts	
Colour	Standard: RAL-colours yellow / red / blue / black	Optional: Metallic red / green / blue / silver	Optional: 184 other colours of the RAL-offer	Optional: 3 reflex colours orange/ lemon / silver

Description	**Battery 55 Ah**	**Battery 73 Ah**
Voltage	12 V	12 V
Capacity	55 Ah	73 Ah
Dimensions in cm (L x W x H)	23x14x20.5	26x17x20.5
Quantity built in chair	2	2

19. Version-Management

Version-No.	Date	Description	Author
1.0	10.07.08	First released Version	T. Meier
1.1	19.11.08	Additions for aid numbers	T. Meier
1.2	09.12.08	Additions for Handicap Institute	T. Meier
1.3	05.02.09	Miscellaneous changes in chapters	T. Meier
1.4	24.02.09	Additions for the R-net control system	T. Meier
1.5	01.01.10	Miscellaneous changes in chapters	T. Räber

LEVO C^3

SERVICE MANUAL

This manual is for use by LEVO AG agents or their authorised dealers.

Read these instructions before servicing the wheelchair.

This service manual must be read in conjunction with the user manual.

Alterations in constructional and technical manner or to the electronic require the written authorisation of LEVO Ltd.; otherwise no warranty or product liability will be accepted.

Version 1.3

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Content

1. Introduction

Apart from regular charging of the batteries and keeping the wheelchair clean the **LEVO** *C*^{3} is maintenance-free and no attention is required by the user.

Because of the complexity of the wheelchair the **LEVO** agent or authorized dealer shall carry out a safety check at least once a year.

This service manual is to be used by the **LEVO** agent or authorised dealer. The manual gives information on how to perform a safety check and carry out repairs to the **LEVO** *C*^{3}*.* This manual provides a good service to the persons in charge of the maintenance of the **LEVO** *C*^{3}. And of course, the user appreciates the safety and the reliability of a well maintained wheelchair.

This manual must always be read and used with the user manual.

2. Health & safety

Accidents do occur. When working on or testing the wheelchair be aware of the dangers and take care to ensure your own and other peoples health and safety.

3. Adjustments

The majority of the adjustments can be carried out by the user or their family and are covered in the instruction manual. However, the **LEVO** agent must always adjust the wheelchair correctly when delivered so that it fits the user.

3.1. Seat depth

The adjustment of the seat depth can be done by the user or their family (see user manual, chapter 9.1.).

3.2. Armrest height

The adjustment of the armrest height can be done by the user or their family (see user manual, chapter 9.6.).

3.3. Adjustment of the knee support

The adjustment of the knee support can be done by the user or their family (see user manual, chapter 9.9.).

3.4. Electronic control system

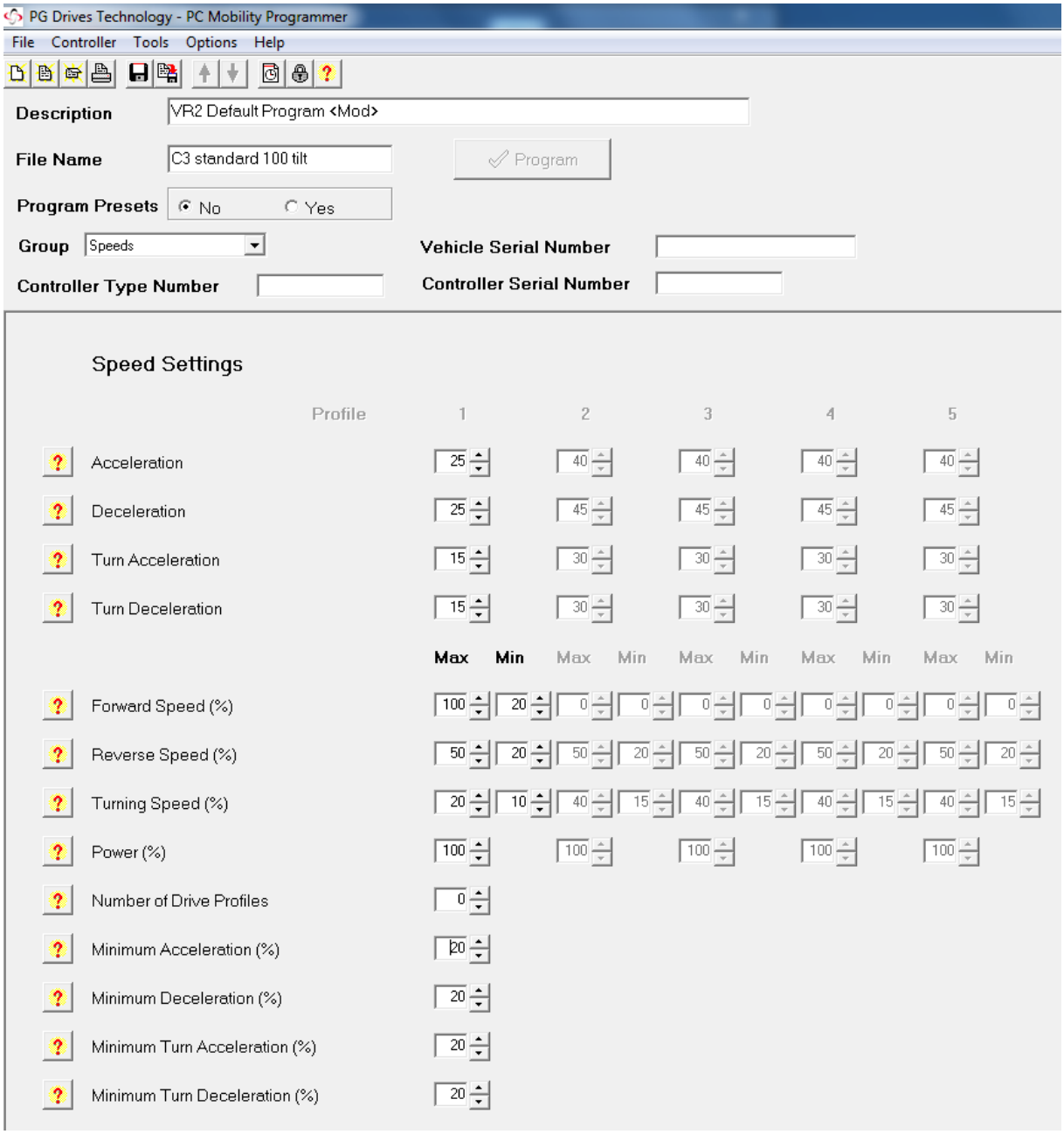
The preset settings are chosen to ensure safe operation. The settings are in compliance with all relevant legal requirements regarding the entire operating range of the joystick and the speed control. In case the preset settings don't meet the needs of the user, the control system can be programmed individually; the maximum speed might be decreased for example.

Warning: Programming should only be conducted by healthcare professionals with in-depth knowledge of PG Drives electronic control systems. Incorrect programming could result in an unsafe set-up of a wheelchair for the user. LEVO AG accepts no liability for losses of any kind if the drive or stability characteristics of the wheelchair are altered without prior notification and discussion with LEVO AG.

It is in the responsibility of the person programming the control system to make sure that the stopping distance requirement specified for the country in which the wheelchair will be used is satisfied. If the braking rate is low, the forward and reverse maximum speed settings may need to be re-programmed. It is in the responsibility of the person programming the control system to make sure that the settings are safe and to note any programming changes made.

3.5. Standard programming PGDT VR2

These are the standard programming parameters for the VR2 controller. For detailed information, please contact **LEVO AG**.



3.6. Standard programming PGDT R-net

These are the standard programming parameters for the R-net controller. For detailed information, please contact **LEVO AG**.

C3 Standard 100.R-net - PGDT Rnet Programmer

File Edit Controller Tools View Help

Parameter								
Profile Management	Profile 1	Profile 2	Profile 3	Profile 4	Profile 5	Profile 6	Profile 7	Profile 8
Profile Name	Standard	Classic	Fun	Profile 4	Profile 5	Profile 6	Profile 7	Attendant
Profile Enable	Yes	No	No	No	No	No	No	Yes
Mode Enable	[12345678]	[12345678]	[12345678]	[12345678]	[12345678]	[12345678]	[12345678]	[12345678]
Input Device Type	Universal	Universal	Universal	Universal	Universal	Universal	Universal	Attendant
Input Device Subtype	All	All	All	All	All	All	All	All
Seat Reversal Profile	No	No	No	No	No	No	No	No
Allow Grab	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Configuration	Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	Mode 7	Mode 8
Mode Name	Drive	Seating	PC Mouse	Enviromental	IR Control	Mode 6	Mode 7	Programming
Input	Drive	Seating	Raw	Raw	Raw	Raw	Raw	Programming
Output	Drive	Seating	Mouse	Environmental	IR Control	Output 5	Output 6	Programming
Speeds	Standard	Classic	Fun	Profile 4	Profile 5	Profile 6	Profile 7	Attendant
Maximum Forward Speed	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Minimum Forward Speed	30 %	30 %	30 %	30 %	30 %	30 %	30 %	10 %
Maximum Reverse Speed	50 %	50 %	50 %	50 %	50 %	50 %	50 %	30 %
Minimum Reverse Speed	15 %	15 %	15 %	15 %	15 %	15 %	15 %	10 %
Maximum Turning Speed	20 %	15 %	25 %	20 %	20 %	20 %	20 %	14 %
Minimum Turning Speed	15 %	5 %	20 %	15 %	15 %	15 %	15 %	9 %
Maximum Forward Acceleration	25	15	35	25	25	25	25	15
Minimum Forward Acceleration	5	3	10	5	5	5	5	3
Maximum Forward Deceleration	25	20	35	25	25	25	25	20
Minimum Forward Deceleration	5	3	10	5	5	5	5	3
Maximum Reverse Acceleration	25	20	35	25	25	25	25	20
Minimum Reverse Acceleration	5	3	10	5	5	5	5	3
Maximum Reverse Deceleration	25	20	35	25	25	25	25	20
Minimum Reverse Deceleration	5	3	10	5	5	5	5	3
Maximum Turn Acceleration	15	10	25	15	15	15	15	10
Minimum Turn Acceleration	5	3	5	5	5	5	5	3
Maximum Turn Deceleration	15	20	25	15	15	15	15	20
Minimum Turn Deceleration	5	3	5	5	5	5	5	3
Power	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Torque	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Tremor Damping	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Fast Brake Rate	40	85	85	40	40	40	40	85
Controls								

4. General instructions

Only a **LEVO** agent or their authorized dealers should carry out servicing and repairs to the **LEVO** *C*^{3}.

- **Repairs:** For advice in all repairs in Switzerland contact **LEVO AG**, Switzerland. For all other countries contact your local **LEVO** agent. Addresses are given at the front of this service manual.

- **Major repairs:** For all major repairs, e.g. bent or damaged frame, always replace complete components. Never try to repair damaged steel work or components.

- **Replacement parts:** Factory replacement components should be used in all repairs; these are available from **LEVO AG**. To order parts see the parts list drawings and the correlative list, both available at **LEVO AG**.

5. Tools & torque settings

The following tools are required to service the wheelchair:

- Spanners and sockets: 8 mm through to 24 mm
- Hexagon key: 2 mm through to 8 mm
- Torque key: 1 Nm through to 50 Nm
- Phillips head screwdriver and slotted screwdriver
- Soft headed hammer

Torque settings:

Bolt size	Torque Nm
M4	3
M5	6
M6	10
M8	25
M10	50

6. Important points

- Do not reuse locknuts. Always replace with a new locknut.
- Always use thread locking compound.
- Always use recommended components and parts available from **LEVO AG.**
- Do not modify or repair the frame.
- **LEVO** is responsible for repairs on gas springs, motors and electronic parts.

7. Recommended safety checks

The following safety checks shall be carried out at least **once a year**. This should be done by a **LEVO** agent or authorized dealer. If a fault is found do not allow the wheelchair to be used until it has been corrected.

- Examine the backrest and possible accessories if they are fixed safely. Repair any fault found immediately.
- Examine the wheelchair frame for any damage. Replace any damaged or faulty components.
- Examine the condition of the seat cushion and the backrest cover and replace if necessary.
- Examine condition of all harnesses, straps and buckles and replace if necessary.
- Examine and operate the footrest mechanism. Replace any damaged or faulty components.
- Examine nuts, bolts, pivots and frame plugs for tightness and general condition. Replace any faulty components.
- Examine the rear wheel, the front wheels and their castors for free rotation and security. Optimize the rotation and repair any fault found.
- The tires are maintenance-free besides occasional cleaning. Use a damp cloth for cleaning. Tires must get replaced when the tire's profile is worn down. (For more information please consult sector 8.3. to 8.5.).
- Check the free wheel device and the motor disengaging lever for correct operation. Repair any fault found.
- Check the mechanical function of the motor disengaging lever. Pull the quick release bolt out and press the motor disengaging lever downwards. Now you should be able to push the wheelchair manually. Push the motor disengaging lever upwards and be careful that the quick release bolt is locked; the wheels should be locked now. If one wheel turns now, the magnetic brake of the motor is damaged. The motor has to be changed.
- Check the powered function of the motor disengaging lever. Switch on the joystick module and start driving forwards. Let of the joystick. As a reaction the wheelchair should stop and the solenoid brakes of the motor should snap in evidence. Repeat this check driving backwards and to each side. In case the motor brakes don't function correctly check the battery indicator on the joystick module for any failure indication. Consult the controller self help guide (user manual chapter 16 using VR2 or chapter 17 using R-net) for details about failure indications.

- Make sure all the connectors are properly inserted, that the brake solenoids are energized and that the solenoid coil is not open or short-circuited by testing the two bigger pins on the motor lead plug. If necessary, replace the motor.

- Check all electrical cables and wires for chafing and clamp spots. Replace if necessary.

- Clean the batteries and terminals. Test the battery capacity and advise the customer of their condition. Charge the batteries before returning the wheelchair to the customer.

- Check all lights and indications. Replace components with failures.

- Check the front wheel lowering cable and mechanism regarding suitable clearance to the floor while sitting and correct movement by changing into stand-up configuration (the middle wheel must be lifted up in standing configuration).

- Use all functions and drive the wheelchair as a final check. In case you notice any kind of problems arrange final repairs.

7.1. Brake Test

These tests should be carried out on a level floor with at least one meter clear space around the wheelchair.

- Switch on the control system.
- Check the TruCharge display remains on, or flashes slowly, after one second.
- Push the joystick slowly forwards until you hear the parking brakes operate. The wheelchair may start to move.
- Immediately release the joystick. You must be able to hear each parking brake operate within 2 seconds.
- Repeat the test a further three times, pushing the joystick slowly backwards, left and right.

7.2. Drive Test

With the maximum speed control in the minimum position, drive the wheelchair in all directions, ensuring the drive is comfortable and easy to control for the user.
Repeat the above but with the speed control set to maximum.

7.3. Gradient Test

Before carrying out this test ensure another person is present to prevent the wheelchair from tipping backwards.

Drive the wheelchair forwards up its maximum rated gradient. While on the gradient release the joystick and ensure the wheelchair comes to rest and the brakes are applied.

Deflect the joystick forwards and continue driving up the slope. Ensure the pick up is smooth and positive.

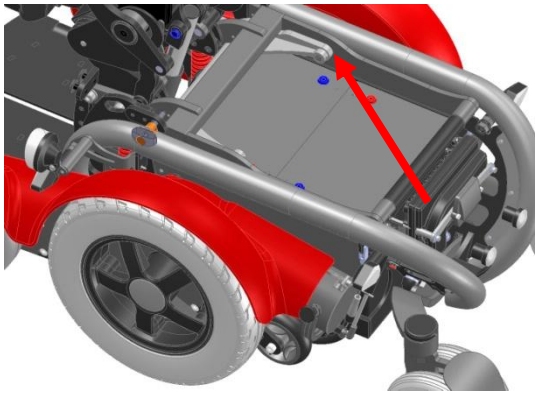
Stop the wheelchair and reverse down the gradient. While on the gradient release the joystick and ensure the wheelchair comes to rest and the brakes are applied.

7.4. Lubrication

There is no need, to lubricate the moving parts and the joints on the chair.

There are 3 exceptions:

- At the conversion support (if the chair is equipped with option tilt in space), it is necessary to put on some grease, **once a year**.

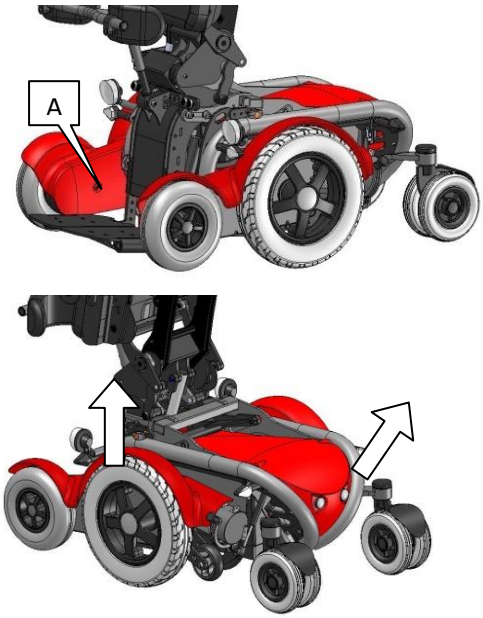


- At the back rest assembly, **once a year** use an oil spray to lubricate the back rest tubes.

- If ther is some noise while stand-up or tilt in space activity, then you may use an oil spray to lubricate the causing part/location.

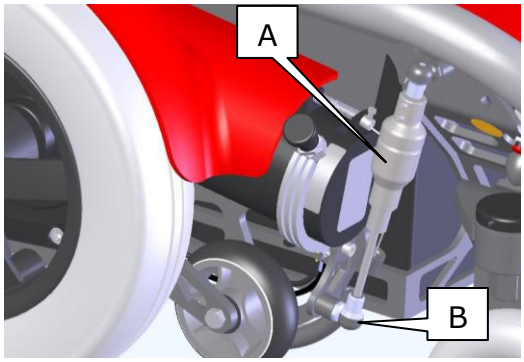
8. Exchanging components

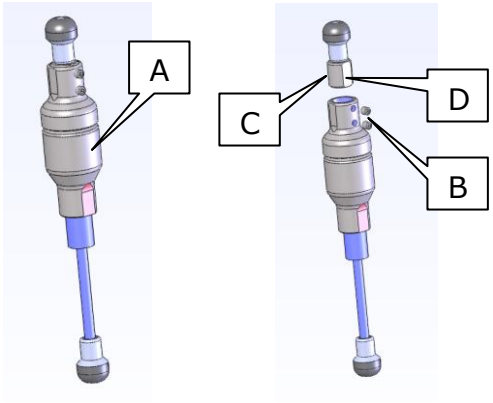
8.1. Exchanging/Removing the covers



The covers are attached with Velcro.
To remove the collateral covers, unscrew (A) at the front on the inside first, and then pull the cover upwards to remove it.
To remove the rear cover, lift the cover at rear bottom and take it off the Velcro, now you can lift the cover upwards to remove it.
If your wheelchair is equipped with light, you have to unplug the lights as well to remove the cover.

8.2. Adjusting the front wheel clearance / suspension



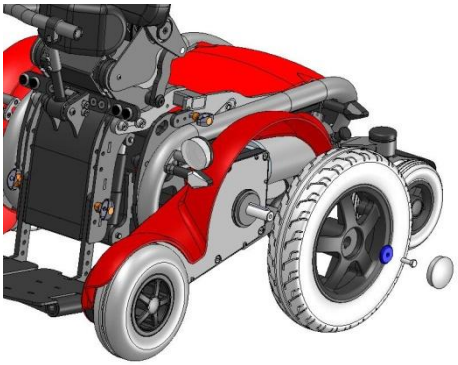


Adjusting the length of the shock absorber (A) will allow a fine tuning of the front wheel to the floor clearance as well as the suspension of the chair. Make sure the chair is in seating position.
Dismount the shock absorber (A) from the motor ball connection (B). Use a lever towards the absorber to relax the absorber's pressure.
Release the two allen key pins (B). The top part of the shock absorber has a threat (C), which allows rotating the lower part. Rotating "clock wise" the shock absorber gets shorter → more front wheels to floor clearance. Rotating "anti clock wise" will extend the absorber → less front wheels to floor clearance.
If more clearance is requested than you can reach, the cable tension either on the front or the back end of the cable cover must be loosened.

After adjustments, assure the allen key pins are tightened directly to the flat surface (D) of the top part (C).

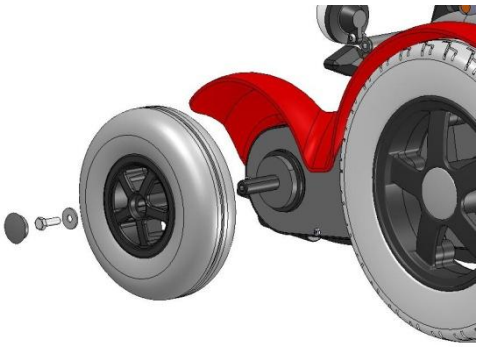
Reassemble the whole shock absorber the opposite way you dismounted it.

8.3. Exchanging the middle wheel



Bring the chair into the standing position to lift the middle wheels off the ground.
Remove the cover cap in the middle of the wheel; lift the cap with a small screwdriver. Afterwards unscrew the screw and take off the wheel.
To fit the new wheel, mount the parts in the reverse order, use thread locker to mount the screw.

8.4. Exchanging the front wheel



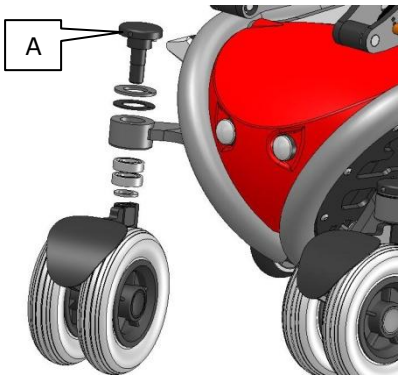
Make sure the wheelchair is in the sitting position, that the front wheels are lifted off the ground.

Remove the cover cap in the middle of the wheel; lift the cap with a small screwdriver. Then loosen the screw and take off the wheel. To fit the new wheel, mount the parts in the reverse order, use thread locker to mount the screw.

8.5. Exchanging the back rotatable wheel

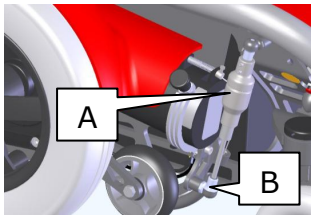
Remove the cover cap in the middle of the wheel by using a fine screw driver to lift the cover cap off, do that with both wheels.
Unscrew the screw going through both wheels and now remove the worn wheel.
Now mount all pieces back together, the other way round.

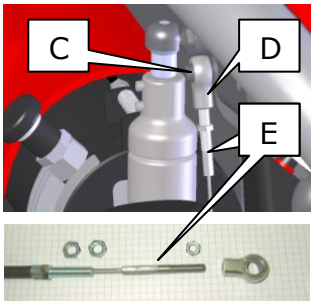
8.6. Exchanging the rotatable fork

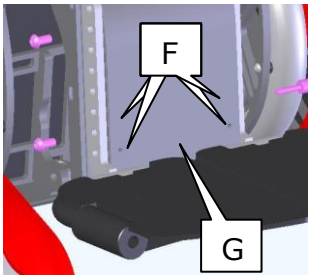


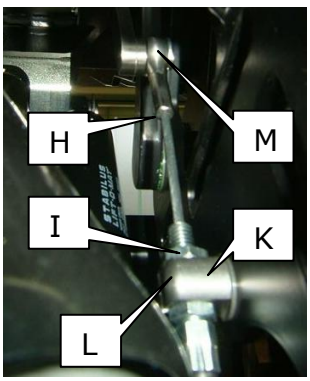
Insert an aglet in the hole (A) and hold it tight, now turn the swiveling fork, looking from the top, clock wise. After turning it a few times you can remove the swiveling fork and replace it with a new one.
Make sure you fasten the swiveling fork with a screw locking device.

8.7. Exchange the front wheel lowering cable









Bring the seat in a seating position and in tilt backward position.

Dismount the shock absorber (A) from the motor ball connection (B) as described in 8.2..

Release the metal ear (C) which holds the head of the rear end cable (D) and take off the cable. Dismount the cabling (E).

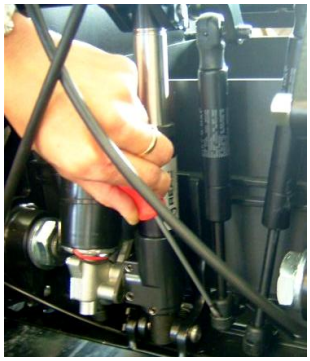
Dismount the front cover (G) loosening the screws (F).

Release the metal ear (M) which holds the head of the front end cable (H) and take off the cable head. Loosen the screw of the cable hose tension adjustment (I) and bring it off the holder (K) through the open gap (L).

The whole cable assembly can now be replaced. Assure that you line up the cable hose the same way by using the front opening and rear metal tubing. Reassemble and adjust the cable, the front cover and the shock absorber the opposite way.

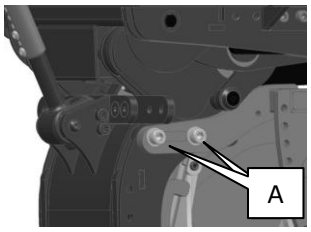
Once the cables are replaced, assure the front wheel to the floor clearance as described in 8.2.

8.8. Gas spring exchange for tilt in space



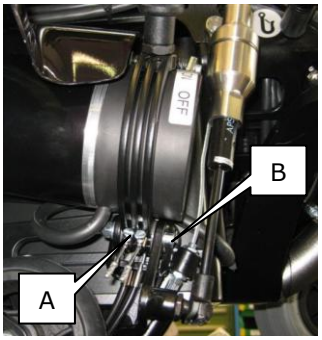
Make sure the wheelchair is in the highest position of the tilt in space function.
Take a screw driver and put it between the plastic heading and the metal clasp, push the clasp a couple of millimeters away from the heading but be careful that the clasp does not come off. After you have lifted the clasp a bit, you should be able to remove the gas spring. Afterwards do the same thing on the other side.
The new gas spring can just be pushed on the ball head.

8.9. Moving the seat to the front or back



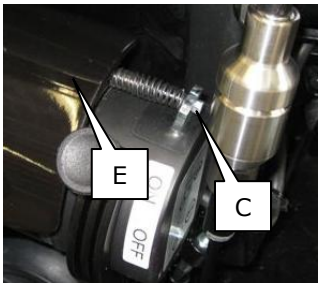
Unscrew the 4 screws (A), and then slide the seat back or forth. When you reach the required position, put the screws back in and tighten them again.

8.10. Exchanging the brake release cable

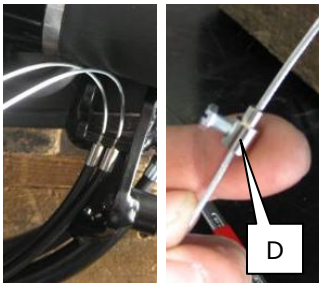


Unscrew the two clasp screws (A), cut of the end cap of the cable and take the cylinder head (D) off. Now loosen the screw (B) that is holding the brake release lever. Pull the lever from the bolt and pull the cables off.

Now pull the cables from the other end (C) through the magnetic brake levers on the motor top end.

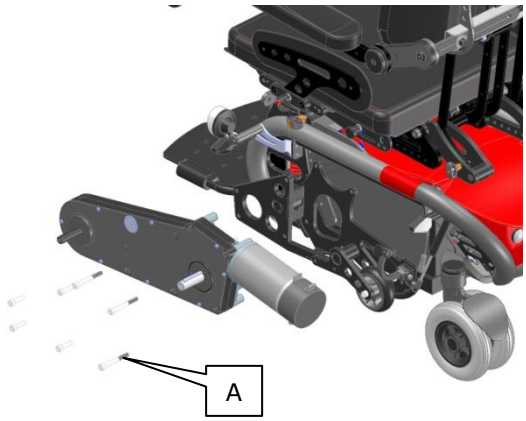


Enter the new cables the other way around and mount the brake release lever again. Now bring the cylinder head (D) to the position closely to the brake release lever where the cables are getting through and fasten the clasp screw (A) of the cylinder head (D) again.



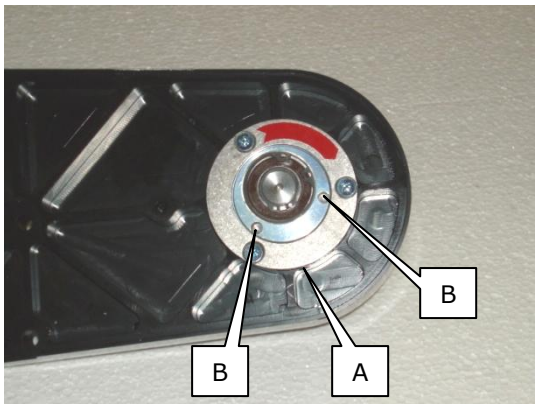
If you now use the brake release lever, you should hear a „click" in the middle of the braking distance. If this is not the case, adjust the tension of the cable by adjusting the cylinder head (D).

8.11. Exchanging the drive motor



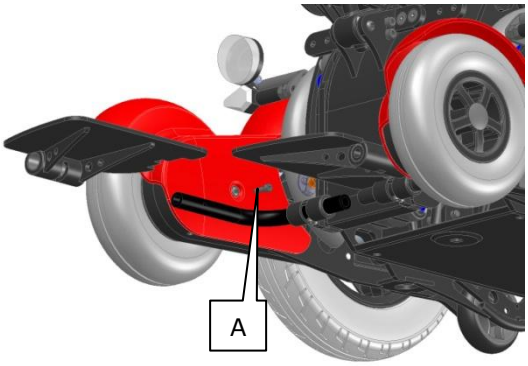
Place something under the wheelchair so the drive wheels are of the ground. Remove the middle wheel (see chapter 8.3.) and the front wheel (see chapter 8.4.)
Unscrew the 7 screws (A) and now you can remove the driving motors and mount new ones.

8.12. Tightening the drive chain



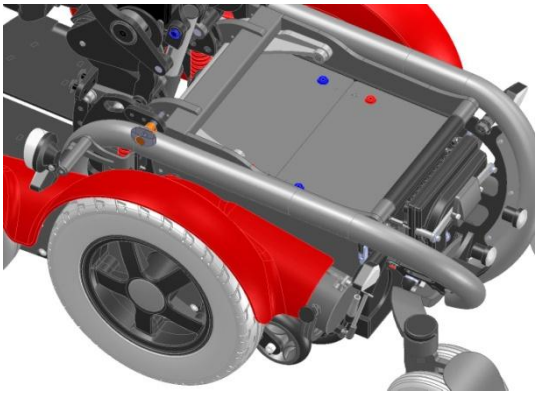
To control the tension of the drive chain, you can remove the rubber cover cap between the front wheel and the middle wheel.
To adjust the tension, loosen grub screw (A). Take two metal bolts and place them in the two holes (B), push a screw driver between the two bolts and turn the excentric around the chain to tighten or loosen it.
When you reach the wished tension, tighten the grub screw again.

8.13. Exchanging the foot plate



Unscrew the screw (A) below the foot plate, now you can remove the foot plate from the tube. Mount the new foot plate and put the screw back in place and tighten it.

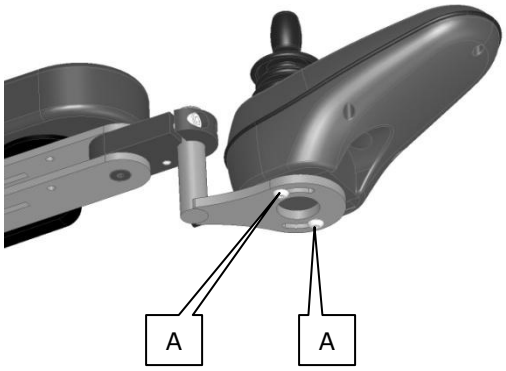
8.14. Exchanging the batteries



Raise the wheelchair into the standing position and remove the middle cover in the back (see chapter 8.1.). Push the pole cover back and unscrew the screws on the battery poles.
Now you can lift out the batteries.
Put the new batteries in and fasten the cable to the right battery poles.

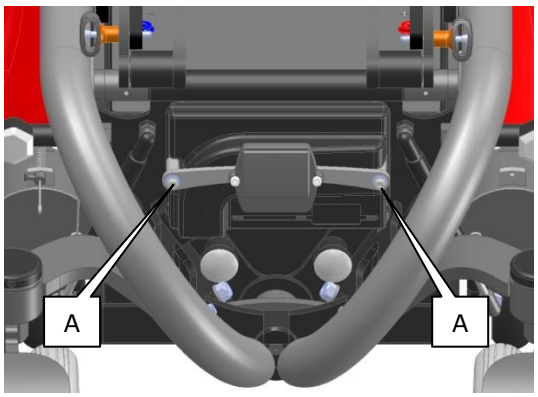
If the batteries are not working, please follow up the instructions at chapter **8.21**.

8.15. Exchanging the joystick module



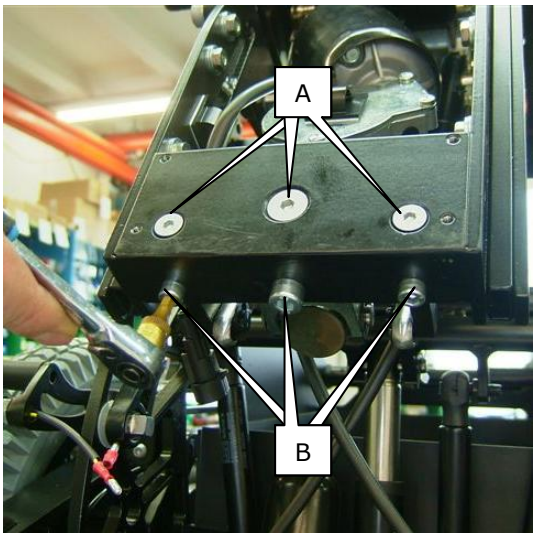
Remove all cable cords from the joystick cable all the way down to the seat pan and unthread the cable. Unscrew both screws (A) under the joystick, now you can replace the joystick module.
Fasten the module again with both screws on the joystick-holder, thread the joystick cable and plug it in and fasten it with cable binder on to the armrest, to the back and under the seat.

8.16. Exchanging the power module



Remove the back cover in the middle first (see chapter 8.1.). Unscrew the screws (A), and then you can tip the power module back. Unplug all plugs from the power module. Switch the power module and plug in the plugs again. Mount the new power module on the wheelchair with the two screws.

8.17. Exchanging the standing actuator

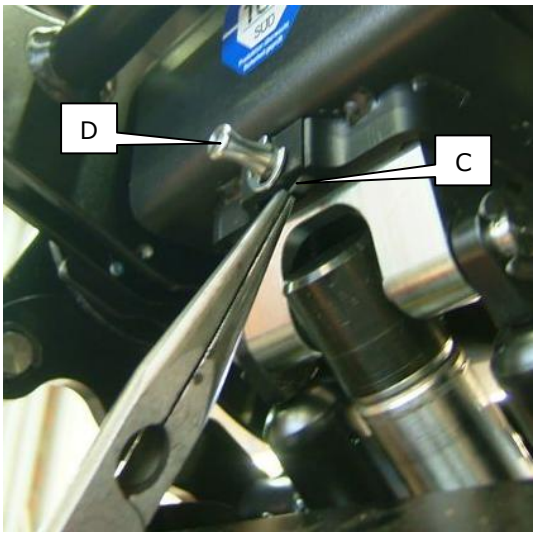


CAUTION – before working on the standing actuator, the chair has to be brought into a full standing position. If this is impossible by power, follow the instruction as described in 8.21.

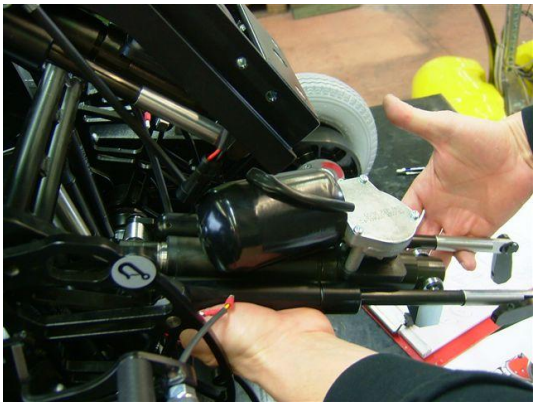
Bring the seat system into the tilt position as much as possible.

Fully release the front wheel lowering cable as described in 8.7.

Release the screws (A)&(B)



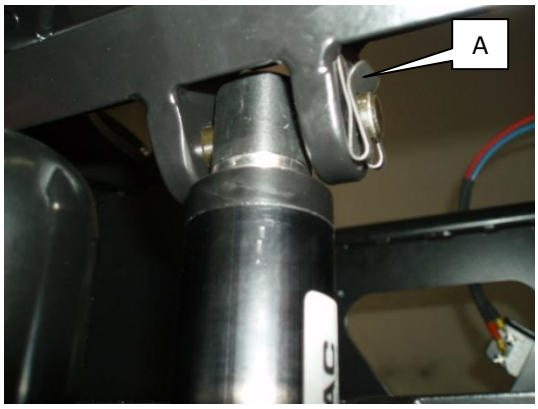
Get of metal ear (C) underneath the seat on the top of the standing actuator and pull of the bolt (D).

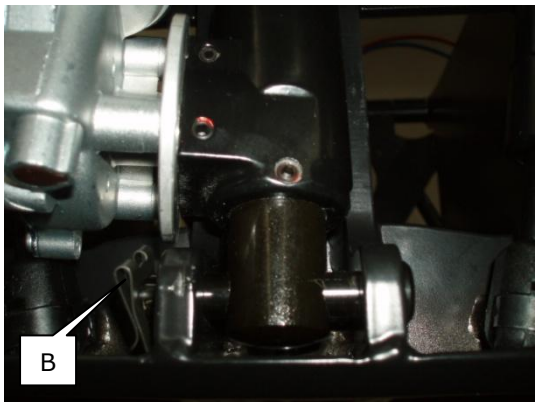


The actuator is now fully released and can be taken off from underneath the leg rest assembly as shown in picture (including the gas cylinders).

Mount the standing actuator and gas cylinders same way as the previous one was dismounted.

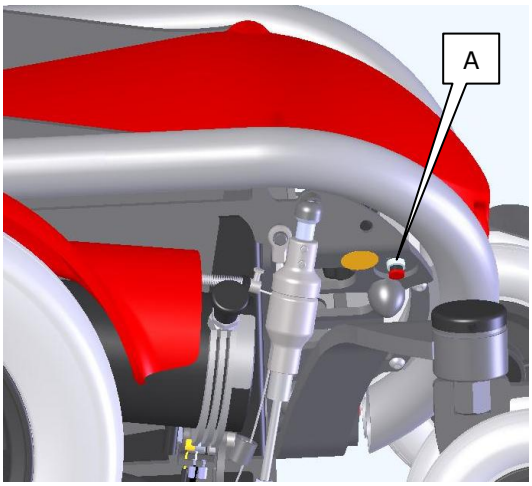
8.18. Exchanging the actuators for the tilt in space





Set the wheelchair in the highest position possible of tilt in space, so that the gas springs are relieved.
Then unplug the actuator. Remove the spring lock (A) on the top bolt and remove the bolt. Entfernen Sie den Schnappverschluss (B) am unteren Bolzen und entfernen Sie diesen ebenfalls.
Now you can equip the actuator and replace it with a new one.
Put the new actuator in and mount the lower bolt, and then plug in the actuator and raise the chair as far up as possible, until the top hole of the actuator is superposed with the ear so you can insert the upper bolt. Mount the shaft locking clip (A).

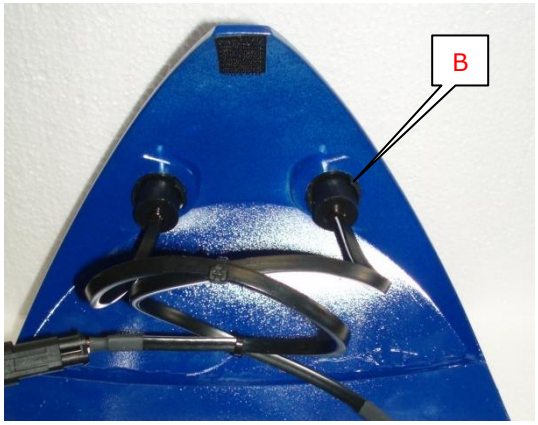
8.19. Exchanging the circuit breaker



Put the wheelchair in the standing position and remove the back cover (see chapter 8.1.).
Turn off the circuit breaker and unscrew the nut (A) to remove the circuit breaker. Unscrew the screws on the battery poles to exchange the circuit breaker completely with the cables.
Take the new circuit breaker and plug in the red cable to the + pole and the blue cable to the – pole on the battery. Mount the circuit breaker with the nut (A) and put the cover back on.

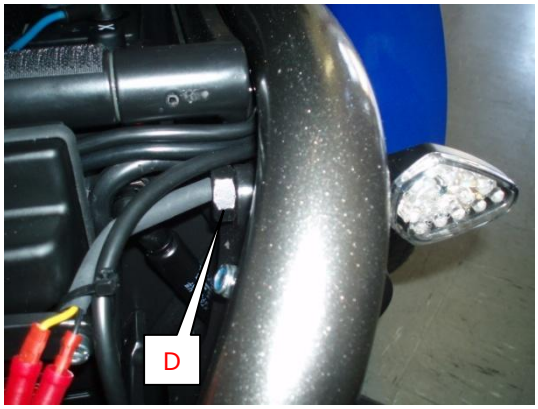
Exchanging the lights

Head lights:
The head lights are LED lights and can only be replaced complete.
Disconnect the cabling from the main chassis and unscrew the nut (A) holding the head light in place. Mount and connect the new head light the same way as you dismounted the old one.



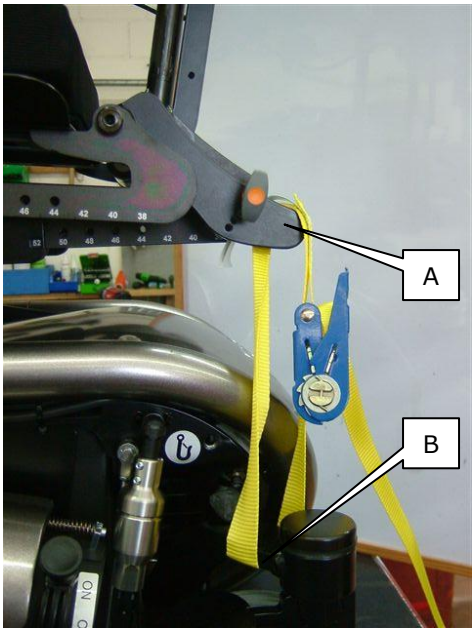
Rear lights:
The rear lights are LED lights and can only be replaced complete.
Put the chair in the standing position and remove the back (chapter 8.1.). Unplug the rear lights. Now press the snap fastener (B) of the rear light together, dismount and disconnect the back light. Mount and connect the new rear light the same way as you dismounted the old one.

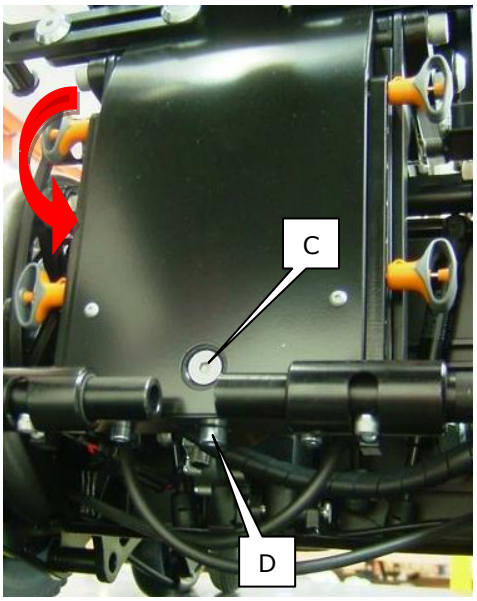
Front indicator:
The indicators can only be replaced complete.
Unplug the cables from the indicator. Remove the nut (C), now you can replace the indicator. Fasten the new indicator with the nut (C) and plug in the cables afterwards.



Rear indicator:
The indicators can only be replaced complete.
Unplug the cables from the indicator. Remove the nut (D), now you can replace the indicator. Fasten the new indicator with the nut (D) and plug in the cables afterwards.

8.20. How to get battery access without power





CAUTION – The seating system is tension loaded for standing configuration. and is held back by the standing actuator. Before loosening the standing actuator, assure the seat is secured and tightened down between the seat/back (A) frame and the rear wheel axle (B).
If the seat is secured as above, unscrew the screw (C) in front of the leg rest and (D) underneath the leg rest. You may have to adjust the tension of the tight down as explained above to get the screws relaxed.
If the standing actuator is unscrewed, the tight down slowly and carefully can be relaxed / loosened. CAUTION: During this process assure nobody has their fingers or hands inside the seating system or main frame. If the tight down gets loose to fast, the seat may catapult into standing.
Finally the seat stays almost in standing, now take off the rear cover and get access to the battery box.
Exchanging the Batteries Chapter 8.14
After changing the batteries, you can extend the standing actuator to the position bringing in the screws (C) and (D). Tighten both screws again.

Option: If you have an external power unit, you can plug it in directly by the stand up actuator behind the leg rest unit. See the red arrow on the picture left.

9. Function control

Always perform full functional tests on the wheelchair when repairs have been completed and before it is returned to the customer. Return the wheelchair to the client after all faults have been rectified and not before.

10. Cleaning

Before returning the wheelchair to the customer ensure the wheelchair is clean and well presented:

- If there is any dirt it should be cleaned off using a damp cloth and then dried thoroughly.
- For more stubborn stains wipe with a damp cloth using a mild solution of warm water and soap.
- Never use furniture polish or any fluids containing alcohol to clean the frame.
- In case of dirt on the seat cushion cover or the back rest cover, you can remove both of it and wash it softly. Do not wash it warmer than **40 degree Celsius.**

11. Technical information

11.1. General information

Driving wheels Tires	dimensions 3.00-8" only airless tires
Front wheels Tires	dimensions 2.80/2.50-4" airless tires
Rear wheels Tires	dimensions 7x1 3/4" airless tires
Speed	0 - 10 km/h precision control (In certain countries there are regulations, considering speed limits for wheelchairs)
Drive motor Actuator	24 V DC, 84 W
Batteries 55 Ah	Maintenance-free lead accumulator in fleece technology 2 pcs. 12V/55 Ah, type MK Battery 12V 45HR2000S Size: 260x135x230 mm/pcs., weight: 18 kg/pcs.
Range	Approx. 25 km **Note:** Range is affected by the loaded weight, hills climbed and temperature.
Maximal tolerable gradient (static)	10° (22%)
Maximal kerb climbing ability	10 cm
Charger	2412 SRF, 24 V DC The no-load voltage is 27.6 V, measured across pins 1 and 3 on the charging plug.
Maximal load including all objects carried along	140 kg
Wheelchair category	B

11.2. Measurements (metric)

Model	**S – XL**
Seat width	32 / 36 / 40 / 44 / 48 / 52 cm
Seat depth adjustable (incl. leg protector)	38 - 66 cm
Seat height	48 cm
Armrest height (from top of cushion)	15 - 36 cm
Footrest height (from top of cushion)	30 - 50 cm
Back height (incl. standard backrest)	40 cm (or any other optional heights)
Overall width	63 cm
Overall length	105 cm
Smallest turning circle (diameter)	110 cm
Overall height (incl. standard backrest)	100 cm
Speed	0 - 10 km/h
Range (55 Ah batteries)	25 km
Max. gradient (sitting position)	10°
Max. gradient (standing position)	3°
Kerb climbing ability (sitting position)	10 cm
Kerb climbing ability (standing position)	2 cm
Measurements LxWxH (not incl. backrest)	105 x 68 x 92 cm
Max. weight (incl. options)	180 kg
Max. load	140 kg

11.3. Measurements (british)

Model	**S – XL**
Seat width	12.6 / 14.2 / 15.8 / 17.4 / 18.9 / 20.5"
Seat depth adjustable (incl. leg protector)	15 - 26"
Seat height	19“
Armrest height (from top of cushion)	5.9 – 14.2"
Footrest height (from top of cushion)	11.8 – 19.7 "
Back height (incl. standard backrest)	15.75" (or any other optional heights)
Overall width	26.8"
Overall length	41.3"
Smallest turning circle (diameter)	43"
Overall height (incl. standard backrest)	39.4"
Speed	0 - 6mph
Range (55 Ah batteries)	16 Miles
Max. gradient (sitting position)	10°
Max. gradient (standing position)	3°
Kerb climbing ability (sitting position)	4"
Kerb climbing ability (standing position)	0,8"
Measurements LxWxH (not incl. backrest)	41.3 x 26.8 x 47.2"
Max. weight (incl. options)	380 Pound
Max. load	310 Pound

11.4. Electromagnetic Interference (EMI)

For important information about electromagnetic interference consult chapter 5 of the user manual.

Advice:

By following the advice listed below, it should reduce the chance of unintentional brake release or powered wheelchair movement.

Do not operate hand-held transceivers (transmitters-receivers), such as citizens band (CB) radios.

Do not switch on personal communication devices, such as cellular phones, while the powered wheelchair is turned ON.

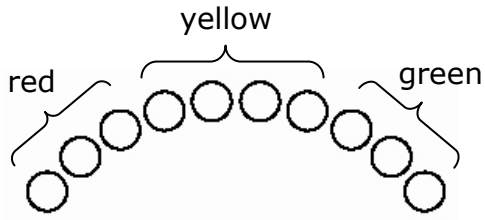
Be aware of any nearby radio or TV station transmitters and try to avoid coming close to them.

If unintentional movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe to do so. Report all incidents of unintentional movement or brake release to your dealer, and note whether there was a radio wave source nearby.

Finally, be aware that adding accessories and components, or modifying the powered wheelchair, may make it more susceptible to EMI. LEVO AG will not take any responsibility for the effects of EMI, if your wheelchair has been altered in any way.

12. Controller self help guide VR-2

The battery indicator provides information in case a fault occurs, to the wheelchair's electronical system. An appropriate number of light bars, start to flash on the display for a particular fault. Please see below:

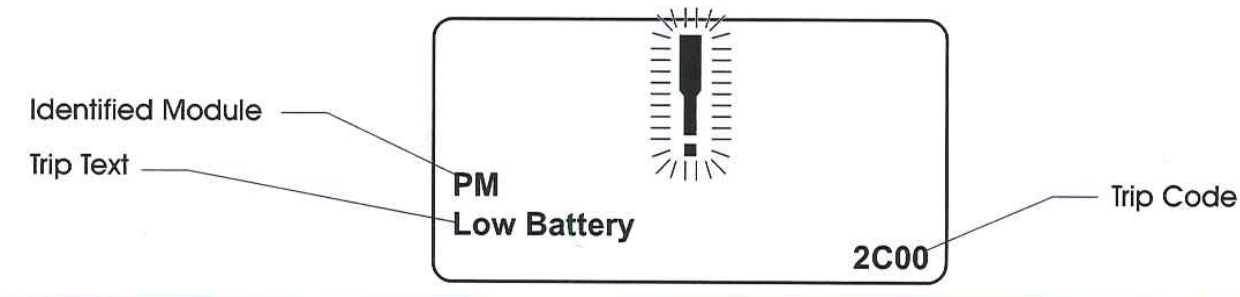


Number blinking bars		
10 green	Height of battery voltage	An excessive voltage has been applied to the control system. This is usually caused by a poor battery connection. Check battery and power module connections. If the fault remains contact your dealer.
9 green	Fault on the motor breaks	The parking brakes have a bad connection. Make sure all connectors are plugged in properly. If the fault remains, contact your dealer.
8 green	Power module fault	A power module fault is indicated. Make sure all the power module connections are plugged in properly.
7 yellow	Joystick module fault	A joystick fault is indicated. Make sure the joystick is in the rest position before switching on.
6 yellow	Charger connected	The battery charger is plugged into the wheelchair. Unplug the charger from the joystick module.
5 yellow	Right motor wiring fault	The right-hand motor has a short circuit to a battery connection. Contact your local agent.
4 yellow	Right motor disconnected	The right-hand motor has a bad connection. Make sure the motor connector is plugged in properly.
3 red	Left motor wiring fault	The left-hand motor has a short circuit to a battery connection. Contact your local agent.
2 red	Left motor disconnected	The left-hand motor has a bad connection. Make sure the motor connector is plugged in properly.
1 red	Low battery voltage	The battery needs charging or there is a bad connection in the battery. Check connections to the battery, power module and joystick module.

If the fault is not rectified after following the recommended instructions, please contact your local dealer for advice. Please provide your dealer with the serial number, which is noted on the warranty card. This number is important in case of any questions of the manufacturing company **LEVO AG**.

13. Controller self help guide R-net

The joystick module has its own error-management-system. If an error occurs, a message is indicated on the display, for example this could look like that:



If you can't solve the problem, just with the showed message, you can enter the trip code on the PG Drives homepage (http://www.pgdt.com/diagmob/diagnostic.asp), there you'll get some more information about the error and how you can solve it. If you can't solve the problem, please get in touch with your **LEVO**-dealer.

14. Version-Management

Version-No.	Date	Description	Author
1.0	10.07.08	First released Version	T. Meier
1.1	9.12.08	Additions for Handicap Institute	T. Meier
1.2	5.2.09	Miscellaneous changes in chapters	T. Meier
1.3	1.1.10	Miscellaneous changes in chapters	T. Räber